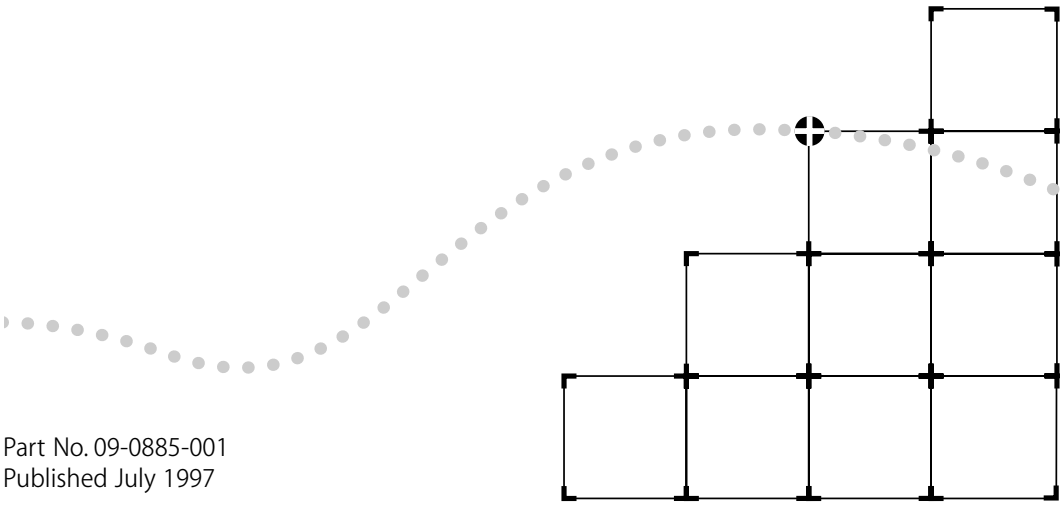
3ComImpact™IQ External ISDN Modem User Guide



Part No. 09-0885-001
Published July 1997

Downloaded from www.Manualslib.com manuals search engine

3Com Corporation ■ 5400 Bayfront Plaza ■ Santa Clara, California ■ 95052-8145

© 3Com Corporation, 1997. All rights reserved. No part of this documentation may be reproduced in any form or by any means or used to make any derivative work (such as translation, transformation, or adaptation) without permission from 3Com Corporation.

3Com Corporation reserves the right to revise this documentation and to make changes in content from time to time without obligation on the part of 3Com Corporation to provide notification of such revision or change.

3Com Corporation provides this documentation without warranty of any kind, either implied or expressed, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. 3Com may make improvements or changes in the product(s) and/or the program(s) described in this documentation at any time.

UNITED STATES GOVERNMENT LEGENDS:
If you are a United States government agency, then this documentation and the software described herein are provided to you subject to the following restricted rights:

For units of the Department of Defense:
Restricted Rights Legend: Use, duplication or disclosure by the Government is subject to restrictions as set forth in subparagraph (c) (1) (ii) for restricted Rights in Technical Data and Computer Software clause at 48 C.F.R. 52.227-7013. 3Com Corporation, 5400 Bayfront Plaza, Santa Clara, California 95052-8145.

For civilian agencies:
Restricted Rights Legend: Use, reproduction or disclosure is subject to restrictions set forth in subparagraph (a) through (d) of the Commercial Computer Software - Restricted Rights Clause at 48 C.F.R. 52.227-19 and the limitations set forth in 3Com Corporation's standard commercial agreement for the software. Unpublished rights reserved under the copyright laws of the United States.

The software described in this documentation is furnished under a license agreement included with the product either as a separate document or on the software distribution diskette in a root directory file named LICENSE.TXT. If you are unable to locate a copy, please contact 3Com and a copy will be provided to you.

Unless otherwise indicated, registered trademarks are registered in the United States and may or may not be registered in other countries.

3Com is a registered trademark of 3Com Corporation. 3ComImpact is a trademark of 3Com Corporation.

CompuServe is a registered trademark of CompuServe, Inc. IBM and AT are trademarks of International Business Machines Corporation. Apple and Macintosh are trademarks of Apple Computer Corporation. UL is a trademark of Underwriters Laboratories, Inc. Pentium is a trademark of Intel Corporation. Microsoft, MS-DOS, Windows, and Windows NT are trademarks of Microsoft Corporation. Siemens is a trademark of Siemens Artiengesellschaft. AT&T is a trademark of American Telephone & Telegraph Company. Northern Telecom is a trademark of Northern Telecom Limited. Motorola is a trademark of Motorola, Inc. LZS is a trademark of hi/fn, Inc. Hayes is a trademark of Hayes Microcomputer Products, Inc. AdTran is a trademark of AdTran Inc.

Other brand and product names may be registered trademarks or trademarks of their respective holders.

Guide written by Eric Heller.

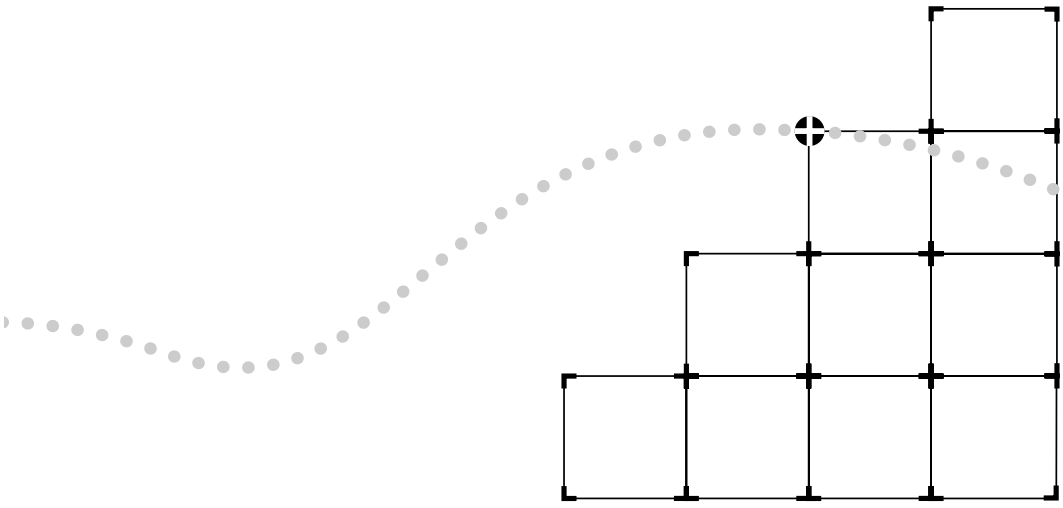
Downloaded from www.Manualslib.com manuals search engine

5-Year Limited Warranty

The warranty for the 3ComImpact™ IQ External ISDN Modem is as stated in the Limited Warranty statement found at the back of this User Guide with the exception that the 3ComImpact IQ External ISDN modem has a 5-year limited warranty on the hardware in lieu of the standard 1-year warranty.

The software for the 3ComImpact IQ External ISDN Modem has a 90-day warranty as further specified in the Limited Warranty statement.

To ensure the very best 3Com service and support, take the time to register on-line or complete the product registration card.



Downloaded from www.Manualslib.com manuals search engine

Downloaded from www.Manualslib.com manuals search engine

Contents

About This Guide

Introduction 1
How to Use This Guide 1
Conventions 2

1 Introduction

3C882 ISDN Modem Features 1-2
3C882 ISDN Modem Package Contents 1-4
Before You Install the 3C882 ISDN Modem 1-5
- IBM PC or Compatible Requirements 1-6
- Apple Macintosh Requirements 1-6
- ISDN Information 1-7

2 Installing the 3C882 ISDN Modem

Familiarizing Yourself with the 3C882 ISDN Modem 2-2
Installing a Serial Cable 2-3
Installing the ISDN Cable 2-5
Installing Analog Equipment 2-5
Installing the Power Cable 2-7

3 Configuration for an IBM-Compatible PC

Configuring the 3C882 ISDN Modem for a PC 3-1
- Installing the 3C882 Software 3-2
- Running the SPID Wizard 3-3
  - Running the SPID Wizard Again 3-8
- Configuring Multilink PPP 3-9
- Configuring the B Channel Rate 3-10
- Configuring Voice Call Routing 3-10
- Verifying the Configuration 3-13

Setup Using Windows 95 3-15
Setup Using Windows NT 3.5.1 RAS 3-17
Setup for Windows NT 4.0 3-20

Downloaded from www.Manualslib.com manuals search engine

Configure Dial-Up Networking 3-23
Dial Up Networking for Windows 95 3-23
To configure Dial-Up Networking manually: 3-23
Running the Internet Set-Up Wizard 3-24
Dial-up Networking for Windows NT 4.0 3-26
Setup for 230Kbps 3-30
Setting up 230K for Windows NT 3.5.1 3-30
Setting up 230K for Windows 95 and Windows NT 4.0 3-31

4 Configuration for an Apple Macintosh Computer

Configuring the 3C882 ISDN Modem for a Macintosh Computer 4-1
Installing the 3C882 Software 4-2
Running the SPID Wizard 4-3
Configuring Multilink PPP 4-7
Configuring the B Channel Rate 4-8
Configuring Voice Call Routing 4-9
Two Telephone Numbers and Two Analog Devices 4-10
Verifying the Configuration 4-11
Configuring Internet Access for a **Macintosh Computer 4-12**
Set Up Using OT/PPP and Open Transport 4-12
Set Up Using FreePPP with Open Transport 4-16

5 Advanced Configuration

Advanced Configuration Parameter Default Values 5-1
Changing the Parameter Settings 5-4

6 Supplementary Voice Features

Supplementary Voice Features 6-1
Call Forwarding 6-1
ISDN Call Waiting 6-2
Call Conference 6-3
Call Drop 6-4
Call Transfer 6-4
ISDN Service from Pacific Bell 6-5

Downloaded from www.Manualslib.com manuals search engine

7 Placing and Receiving Calls

Placing ISDN Data Calls 7-1
- Placing Calls Automatically 7-2
- Placing Calls Manually 7-2
- Placing Multilink PPP Calls 7-3
- Placing a TollMizer Call 7-4

Receiving ISDN Data Calls 7-5
Placing Voice Calls Using an Analog Phone Port 7-6
Receiving Voice Calls Using an Analog Phone Port 7-6
ISDN Call Logging 7-7

Troubleshooting

Checking the Basics 8-2
Monitoring LEDs 8-2
- Monitoring the TEST LED 8-2
- Monitoring the D Channel LED 8-3
- Monitoring the B Channel LEDs 8-3
- Monitoring the SD LED 8-3
- Monitoring the RD LED 8-3
- Monitoring the DTR LED 8-4

Evaluating Symptoms and Solutions 8-4
Microkey Error Codes 8-8
Restoring the 3C882 ISDN Modem to Autobaud 8-9
Using On-Line Help 8-10
Finding More Information 8-10
Downloading Firmware to Your 3C882 ISDN Modem 8-10

A Ordering ISDN Service

Placing the ISDN Order Through 3Com A-1
Placing the ISDN Order Through Your Telephone Company A-1
What Do I Need To Support Supplementary Voice Features? A-3
ISDN Line Parameter Tables A-4
- AT&T 5ESS Switch NI1 A-5
- AT&T 5ESS Custom Switch A-6
- NorthernTelecomDMS 100 Switch A-7
- Siemens EWSD Switch A-8

Downloaded from www.Manualslib.com manuals search engine

B AT COMMANDS, S REGISTERS, AND RESULT CODES
AT Command Set B-1
S Registers B-4
Result Codes B-9

C SPECIFICATIONS
3C882 ISDN Modem Specifications C-1
RS-232 COM Port Pin Specifications C-2
PC Serial Cable Pin Specifications C-3
Macintosh Serial Cable Pin Specifications C-3

D CONFIGURATION USING DOS
Configuration Using DOS D-1

GLOSSARY

INDEX

LIMITED WARRANTY

3COM END USER SOFTWARE LICENSE AGREEMENT

FCC CLASS B CERTIFICATION STATEMENT

CANADIAN NOTICE

Downloaded from www.Manualslib.com manuals search engine

Figures

1-1 Network Access with the 3C882 ISDN Modem 1-1
1-2 ISDN Information Sheet 1-7

2-1 Installation Steps for the 3C882 ISDN Modem 2-1
2-2 Front Panel LED Indicators 2-2
2-3 Back Panel Connectors 2-2
2-4 Computer to 3C882 ISDN Modem COM Port Connection 2-4
2-5 ISDN Cable Connection 2-5
2-6 Analog Equipment Connection 2-6
2-7 Power Cable Connection 2-7

3-1 Main Configuration Steps for a PC 3-1
3-2 Run Dialog Box 3-2
3-3 Welcome Screen for PC 3-2
3-4 3ComImpact IQ Globe Icon 3-4
3-5 SPID Wizard Start Message for PC 3-4
3-6 First Telephone Number Dialog Box for PC 3-5
3-7 Second Telephone Number Dialog Box for PC 3-6
3-8 Successful Configuration Dialog Box 3-6
3-9 Configuration Dialog Box for PC 3-7
3-10 Voice Call Routing Default Setting 3-11
3-11 Configuration for One Telephone Number and Two Devices 3-12
3-12 Configuration for Two Telephone Numbers and Two Analog Devices 3-12
3-13 New Hardware Dialog Box 3-15
3-14 Install From Disk Dialog Box 3-16
3-15 Select Device Dialog Box 3-16
3-16 Network Settings Dialog Box 3-18
3-17 Remote Access Setup Dialog Box 3-19
3-18 Install New Modems Dialog Box 3-21
3-19 Modem Manufacturers and Models Dialog Box 3-22
3-20 New Phonebook Entry Wizard 3-27

Downloaded from www.Manualslib.com manuals search engine

3-21 Phonebook Entry Screen 3-28
3-22 Server Type Screen 3-28

4-1 3C882 Configuration Steps for a Macintosh 4-1
4-2 Installation Message Box 4-2
4-3 Successful Installation Message Box 4-3
4-4 3ComImpact IQ Program Icon 4-3
4-5 Select Modem Port Screen 4-4
4-6 SPID Wizard Start Screen 4-4
4-7 First Telephone Number Screen for Macintosh 4-5
4-8 Second Telephone Screen for Macintosh 4-6
4-9 Configuration Dialog Box for Macintosh 4-7
4-10 Voice Call Routing Default Setting 4-9
4-11 Configuration for One Telephone Number and Two Devices 4-10
4-12 Configuration to ring both ports simultaneously 4-11
4-13 PPP Control Panel 4-13
4-14 OT/PPP Modem Control Panel 4-14
4-15 TCP/IP Control Panel 4-15
4-16 FreePPP Setup Screen 4-16
4-17 FreePPP Account Screen 4-17
4-18 FreePPP Connection Screen 4-18
4-19 FreePPP Modem Setup Screen 4-18
4-20 FreePPP TCP/IP Control Panel 4-20

Downloaded from www.Manualslib.com manuals search engine

TABLES

1 Text Conventions 2
2 Notice Icons 2

2-1 Front Panel LED Indicator Definitions 2-2

5-1 Changing Default Settings 5-5

6-1 How to Use Call Waiting 6-2
6-2 How to Use Call Conference 6-3
6-3 How to Use Call Transfer 6-4

8-1 Symptoms, Causes, and Solutions 8-4
8-2 Microkey Error Codes and Their Meaning 8-8

A-1 Supporting Supplementary Voice Features A-4
A-2 Line Configuration for AT&T 5ESS NI1 A-5
A-3 Line Configuration for AT&T 5ESS Custom A-6
A-4 Line Configuration for DMS 100 A-7
A-5 Line Configuration for Siemens EWSD A-8

B-1 AT Command Set Summary B-1
B-2 S Registers B-4
B-3 3C882 ISDN Modem Result Codes B-9

C-1 Pin Descriptions C-2
C-2 PC COM Port Cable Pin Assignments C-3
C-3 Macintosh COM Port Cable Pin Assignments C-3

Downloaded from www.Manualslib.com manuals search engine

Downloaded from www.Manualslib.com manuals search engine

About This Guide

Introduction

This guide describes how to install, operate, and troubleshoot the 3ComImpact™ IQ External ISDN Modem, referred to throughout this guide as the 3C882 ISDN modem.

Be sure to read the README.TXT or readme files on the applicable software utility diskette for the latest product information.

How to Use This Guide

The following table shows where to find specific information in this guide.

If you are looking for:	Turn to:
General information	Chapter 1
Instructions for installation	Chapter 2
Instructions for configuration for an IBM® or compatible PC	Chapter 3
Instructions for configuration for a Macintosh® computer	Chapter 4
Advanced configuration	Chapter 5
Information on supplementary voice features	Chapter 6
Instructions for placing and receiving data and voice calls	Chapter 7
Troubleshooting tips	Chapter 8
Instructions for ordering ISDN service	Appendix A
Tabular summary of the AT command line set, S registers, and result codes	Appendix B
3C882 ISDN modem specifications	Appendix C
Instructions for configuration using DOS	Appendix D

Downloaded from www.Manualslib.com manuals search engine

Conventions

Table 1 and Table 2 list text and icon conventions that are used throughout this guide.

Table 1 Text Conventions

Convention	Description
Text represented as `screen display`	`This typeface` is used to represent displays that appear on your terminal screen, for example: `NetLogin:`
Text represented as **`commands`**	**`This typeface`** is used to represent commands that you enter, for example: **`SETDefault !0 -IP NETaddr = 0.0.0.0`**
Keys	When specific keys are referred to in the text, they are called out by their labels, such as "the Return key" or "the Escape key," or they may be shown as [Return] or [Esc]. If two or more keys are to be pressed simultaneously, the keys are linked with a plus sign (+), for example: Press [Ctrl]+[Alt]+[Del].
Italics	*Italics* are used to denote *new terms* or *emphasis*.

Table 2 Notice Icons

Icon	Type	Description
	Information Note	Information notes call attention to important features or instructions.
	Caution	Cautions contain directions that you must follow to avoid immediate system damage or loss of data.
	Warning	Warnings contain directions that you must follow for your personal safety. Follow all instructions carefully.

Downloaded from www.Manualslib.com manuals search engine

1 INTRODUCTION

The 3ComImpact IQ™ External ISDN Modem (referred to as the 3C882 ISDN modem throughout this guide) is an external, stand-alone Integrated Services Digital Network (ISDN) Basic Rate ISDN modem for connection with digital telephone services from local telephone companies in North America. One model (3C882) supports both IBM® or IBM-compatible PCs and Apple® Macintosh® computers.

The 3C882 ISDN modem is designed for users who require high-speed access to the Internet, intranet, on-line information services, or corporate local area networks (LAN). A typical 3C882 ISDN modem application is shown in Figure 1-1.

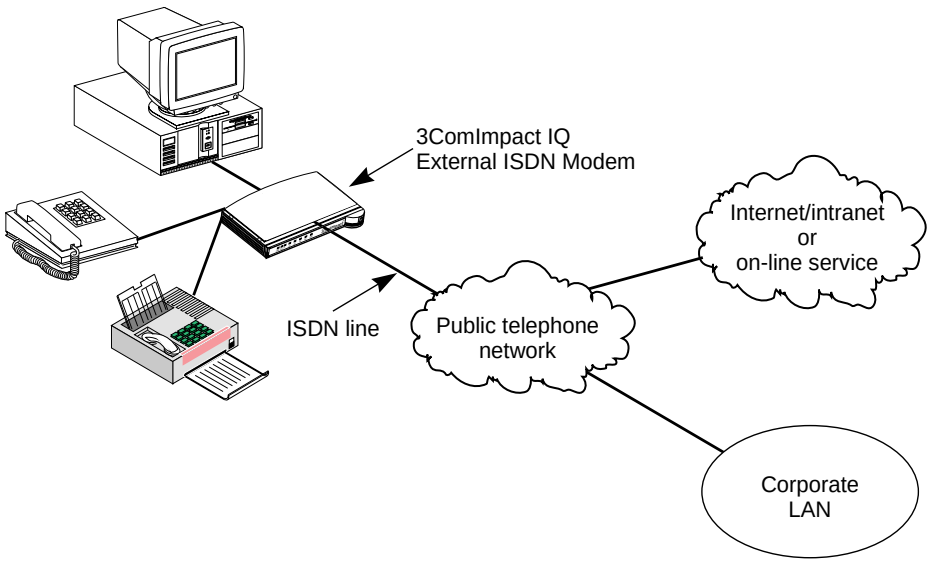


Figure 1-1 Network Access with the 3C882 ISDN Modem

The 3C882 ISDN modem allows transmission of data at speeds of up to 128 Kbps over digital ISDN connections with

Downloaded from www.Manualslib.com manuals search engine

the highest reliability and error-free performance possible. With hi/fn® compression and a high-speed serial port, the 3C882 ISDN modem allows you to reach transmission speeds of up to 230.4 Kbps. ISDN technology reduces call setup times by more than 50% compared to V. fast/V.34 analog modem setup times; connection is established in 3 seconds.

Setting up the 3C882 ISDN modem takes only 15 minutes. Simply connect the cables, load the software, run the SPID Wizard™, and you are ready to place a call.

The 3C882 ISDN modem quickly processes data and voice calls simultaneously. For example, you can send a fax or place a voice telephone call while maintaining a high-speed connection to the office LAN; you can also send or receive a voice telephone call while you are connected to the Internet.

The 3C882 ISDN modem can be connected to any compatible UL®-listed computer that includes RS-232-compliant serial ports.

3C882 ISDN Modem Features

The 3C882 ISDN modem provides the following features.

Easy Installation and Use

- SPID Wizard feature for automatic telephone company switch and service profile ID (SPID) number configuration
- Single screen, point-and-click user interface for configuration
- Autobaud feature for automatic baud rate detection of your computer's COM port
- QuickSelect™protocol detection that automatically senses the required protocol, either V.120 or PPP, for each data call
- Automatic configuration verification with on-line registration
- On-line Help

Downloaded from www.Manualslib.com manuals search engine

High Performance

- hi/fn™, version 5, compression, for data throughput of up to 230.4 Kbps, which conforms to these IETF RFC's: *The PPP Compression Control Protocol* (1962), and *PPP LZS Compression Protocol (1974)*
- An asynchronous RS-232-D data port for connectivity to IBM or compatible PC and Apple Macintosh serial ports at rates of up to 230.4 Kbps
- Multilink PPP (RFC 1990), which creates a single digital network connection of up to 128 Kbps
- TollMizer, which places a data call over a voice connection, saving you the additional charge for a data call
- Support for Shiva's Proprietary PPP Password Authentication Protocol (SPAP), versions 2 and 3

Protocols

- ANSI V.120 rate adaption
- Async-Sync PPP™ feature, which automatically converts asynchronous PPP into synchronous (HDLC-based) PPP ISDN
- IETF PPP (RFC 1661)
- IETF Multilink PPP
- ISDN Call Logging

ISDN Standards and Interface

- A complete digital network termination (Basic Rate ISDN U interface with built in NT1)
- Full ISDN signaling support of National ISDN
- Compatible with AT&T, Northern Telecom, and Siemens switches

Downloaded from www.Manualslib.com manuals search engine

Security

- Password Authentication Protocol (PAP) and Challenge Handshake Authentication Protocol (CHAP) support on both single-channel and Multilink PPP calls (IETF RFC 1994)

Voice Features

- Dynamic bandwidth allocation (DBA), which allows you to place or receive a voice call while a Multilink PPP call is active
- Two analog voice ports for attaching analog telephone equipment (touch-tone or cordless telephones, fax and answering machines, and analog modems) to the ISDN line
- Flexible call routing to the two analog ports

Upgradability

- Flash memory for field firmware updates
- Firmware posted on 3Com's ftp and BBS sites

Diagnostics

- LED status display
- Test call compatibility

Warranty

- 5-year limited warranty

3C882 ISDN Modem Package Contents

The 3C882 ISDN modem package contents contains one each:

- 3ComImpact IQ External ISDN Modem
- Power cable with an AC wall transformer
- RJ-45/RJ-11 ISDN telephone cable
- 25-pin male to 9-pin female serial cable

Downloaded from www.Manualslib.com manuals search engine

- 3.5-inch installation diskettes for PCs running Windows® 95, Windows NT®, or Windows 3.x
- 3.5-inch installation diskette for PCs running DOS
- 3.5-inch installation diskette for Macintosh computers
- 3ComImpact IQ External ISDN Modem User Guide
- 3ComImpact IQ External ISDN Modem Quick Start Instructions
- RS232 Serial Port Cable

Before You Install the 3C882 ISDN Modem

To install and use the 3C882 ISDN modem successfully, you must have the following:

- Correct ISDN service installed at your location with an available ISDN RJ-11 outlet. If you have not ordered ISDN service yet, see Appendix A.
- ISDN configuration information. Complete the ISDN Information Sheet in the "ISDN Information" section of this chapter.
- A computer that meets UL standards in the United States or is certified to CSA standards in Canada. Refer to the section "IBM PC or Compatible Requirements" for an IBM or IBM-compatible PC. Refer to the section "Apple Macintosh Requirements" for an Apple Macintosh computer.
- For Macintosh users, one 25-pin male to mini DIN 8-pin male serial cable.

To order a free Macintosh serial cable, refer to the information enclosed in your 3C882 ISDN modem package. If you are supplying your own serial cable, ensure that it meets the pin specifications provided in Appendix C.

Downloaded from www.Manualslib.com manuals search engine

IBM PC or Compatible Requirements

An IBM-compatible PC must have the following:

- A 386, 486, or Pentium® processor
- Microsoft® Windows 95, Windows NT, or Windows 3.x, MS-DOS®, or IBM PC DOS 3.x or higher
- 640 KB of conventional memory
- A hard disk drive with 4 MB of free space
- A high-density 3.5-inch floppy diskette drive
- VGA or compatible video graphics adapter and monitor (color recommended)
- An available serial communications port

  For 230.4 Kbps data rate. You will need an enhanced serial port card and COM port driver software that support 230.4 Kbps.

  For 115.2 Kbps data rate. 3Com recommends that your IBM or IBM-compatible PC serial COM port be equipped with a 16C550 UART (universal asynchronous receiver/transmitter). To determine what UART is installed in your PC, run the Microsoft Diagnostic Program (msd) from the DOS prompt.

Apple Macintosh Requirements

An Apple Macintosh computer must have the following:

- An available serial communications port
- System 7 or later operating system
- A hard disk drive with 4 MB of free space
- A high-density 3.5-inch floppy diskette drive

Downloaded from www.Manualslib.com manuals search engine

ISDN Information

Enter your ISDN telephone number(s) in the information sheet shown in Figure 1-2. You will need this information during configuration of the 3C882 ISDN modem.

Although the 3C882 ISDN modem automatically configures the ISDN switch type and Service Profile Identifier (SPID) number(s), you should indicate the switch type and SPID(s), if any were assigned. You may need to refer to this information for technical support.

If necessary, ask your telephone company ISDN representative for the ISDN information.

ISDN Information Sheet
3ComImpact IQ ISDN Modem

ISDN Switch Type

- AT&T 5ESS NI1 ❒
- AT&T 5ESS Custom ❒
- Northern Telecom DMS 100 ❒
- Siemens EWSD ❒

Number of Telephone Numbers (1 or 2) _____

Phone #1_____

SPID # for Phone #1_____

Phone #2_____

SPID # for Phone #2_____

Figure 1-2 ISDN Information Sheet

ISDN Switch Type. Place a check mark next to the ISDN switch your telephone company uses. Each switch type has a corresponding provisioning table in Appendix A.

Number of ISDN Telephone Numbers. Your one ISDN telephone line can support two ISDN telephone numbers. If

Downloaded from www.Manualslib.com manuals search engine

you ordered one ISDN telephone number, write 1. If you ordered two ISDN telephone numbers, write 2.

Ordering two ISDN telephone numbers allows you to conduct two simultaneous calls on both analog phone ports.

ISDN Telephone Number 1. Write down your ISDN telephone number provided to you by the telephone company ISDN representative.

ISDN Telephone Number 2. Write the second ISDN phone number if you ordered two ISDN telephone numbers for your line.

SPID Number. If required by your telephone company, fill in the SPID number for each ISDN phone number. Your telephone company can tell you whether a SPID is required and supply you with the correct value.

Downloaded from www.Manualslib.com manuals search engine

2 Installing the 3C882 ISDN Modem

This chapter describes installation of the 3C882 ISDN modem for use with an IBM or IBM-compatible PC or an Apple Macintosh computer.

This installation procedure assumes that you are familiar with your Apple Macintosh or IBM-compatible computer. If you are not, refer to the user guide that accompanied your computer for instructions on hardware installation and operating system commands.

The main hardware installation steps are depicted in Figure 2-1.

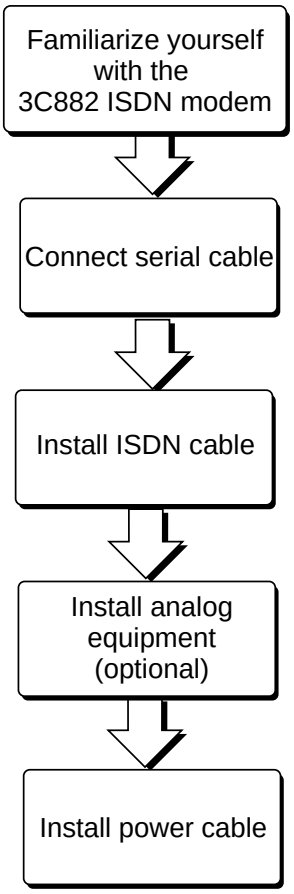

Familiarize yourself with the 3C882 ISDN modem
Connect serial cable
Install ISDN cable
Install analog equipment (optional)
Install power cable

Figure 2-1 Installation Steps for the 3C882 ISDN Modem

Downloaded from www.Manualslib.com manuals search engine

Familiarizing Yourself with the 3C882 ISDN Modem

You should familiarize yourself with the components of the front panel and back panel of the 3C882 ISDN modem prior to installation.

The LED status display, shown in Figure 2-2, consists of eight front panel LEDs that are described in Table 2-1.

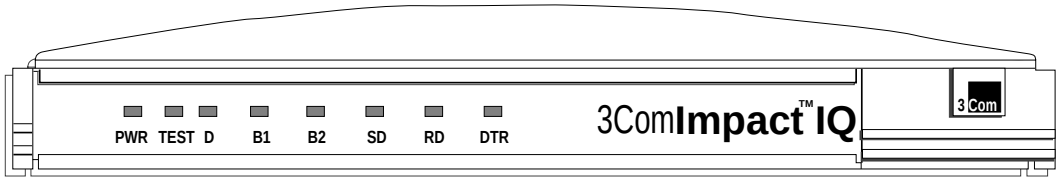


Figure 2-2 Front Panel LED Indicators

Figure 2-3 shows the back panel.

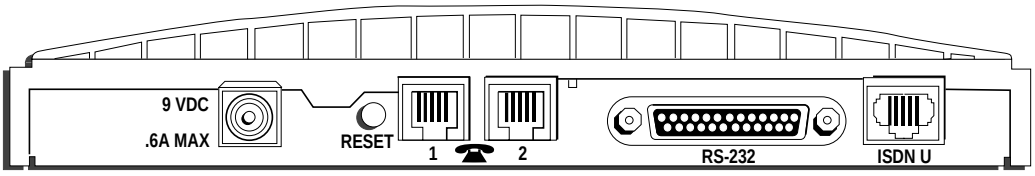


Figure 2-3 Back Panel Connectors

Table 2-1 Front Panel LED Indicator Definitions

LED	Color	Description
PWR	Green	**Power Indicator.** Lit when power is on and remains lit as long as power is supplied to the unit.
TEST	Green	**Self-Test/Status.** Flashes when the 3C882 ISDN modem is executing its power-up self-test or a user-initiated reset. If the results of the self-test or reset are normal, the LED goes off. If the result of the self-test is abnormal and a fault is detected, the LED remains lit but does not flash.

Downloaded from www.Manualslib.com manuals search engine

LED	Color	Description
D	Green	**D Channel Status.** Indicates the ISDN physical network interface and D channel status: Goes off once the physical and D channel signaling are synchronized. Flashes if the physical interface establishes synchronization and the ISDN D channel signaling procedures are not properly established. Remains lit if the physical ISDN interface is not synchronized or is disconnected.
B1	Amber or green	**B1 Channel Activity.** Green indicates a circuit-switched data call in progress. Amber indicates a circuit-switched voice call in progress. If a call is in a dialing state, the LED flashes. When the call is disconnected, the LED goes off.
B2	Amber or green	**B2 Channel Activity.** Green indicates a circuit-switched data call in progress. Amber indicates a circuit-switched voice call in progress. If a call is in a dialing state, the LED flashes. When the call is disconnected, the LED goes off.
SD	Green	**Send Data.** Indicates that information is being transmitted over the serial data port from the computer to the ISDN modem.
RD	Green	**Receive Data.** Indicates that information is being transmitted over the serial data port to the computer from the ISDN modem.
DTR	Green	**Data Terminal Ready.** Indicates that communication between the ISDN modem and computer has been established.

Installing a Serial Cable

You will need the following type of serial cable.

- For a Macintosh computer, you will need a 25-pin male to mini DIN 8-pin male serial cable. Refer to the information enclosed in your 3C882 ISDN modem package to order a free cable. If you are providing your own serial cable, ensure that it meets the pin specifications provided in Appendix C.
- For a PC, you will need the 25-pin male to 9-pin female serial cable that was provided. For PCs with a 25-pin serial port connector, you will need to purchase a standard 9-pin to 25-pin adapter.

Downloaded from www.Manualslib.com manuals search engine

To install the 3C882 ISDN modem serial cable:

1 **Insert the 25-pin male end of a serial signal cable into the RS-232 serial port on the 3C882 ISDN modem's back panel and tighten the connector screws, as shown in Figure 2-4.**

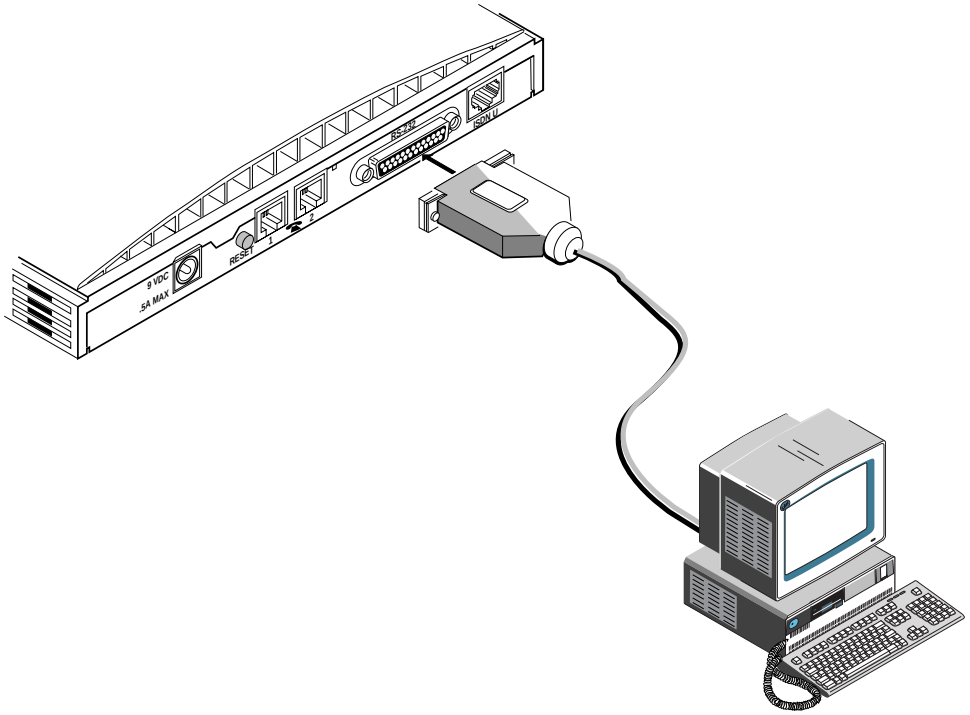


Figure 2-4 Computer to 3C882 ISDN Modem COM Port Connection

2 **Connect the other end of the serial cable to a serial COM port on the back of your computer and tighten the connector screws.**

On a PC, most COM port connectors are labeled COM, SERIAL, or RS-232-D. On an IBM AT® PC and most laptops or notebooks, connect the cable to a 9-pin COM port connector. If your PC has a 25-pin serial port connector, you will need to install a standard 9-pin to 25-pin adapter.

On a Macintosh computer, the COM port is the mini DIN 8-pin serial connector depicted by the telephone handset.

Downloaded from www.Manualslib.com manuals search engine

[1]Installing the ISDN Cable

To install the ISDN cable:

1 **Connect the RJ-45 (8-pin) connector end of the RJ-45/RJ-11 ISDN cable to the RJ-45 ISDN line port labeled ISDN U on the 3C882 ISDN modem's back panel, as shown in Figure 2-5.**

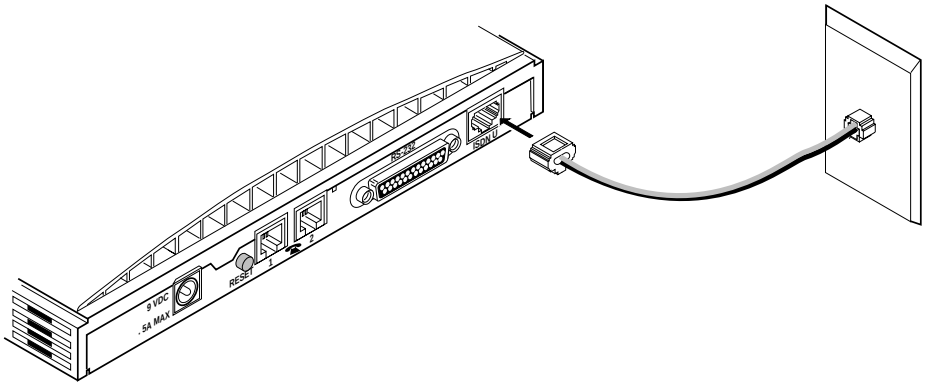


Figure 2-5 ISDN Cable Connection

2 **Connect the RJ-11 (6-pin) connector end of the RJ-45/RJ-11 ISDN cable to the RJ-11 ISDN wall jack.**

CAUTION: *An NT1 is built into the 3C882 ISDN modem. Never connect the 3C882 ISDN modem ISDN port to a standard analog telephone jack or to an external NT1 device. Make sure that it is connected directly to the ISDN jack.*

Installing Analog Equipment

You can connect an analog touch-tone telephone, answering machine, fax machine, or external analog modem to the 3C882 ISDN modem.

You will need an RJ-11 to RJ-11 cable for each analog phone port connection.

To install an analog device:

1.

Downloaded from www.Manualslib.com manuals search engine

1 Insert one RJ-11 connector to a phone port labeled with a telephone icon on the back of the ISDN modem, as shown in Figure 2-6.

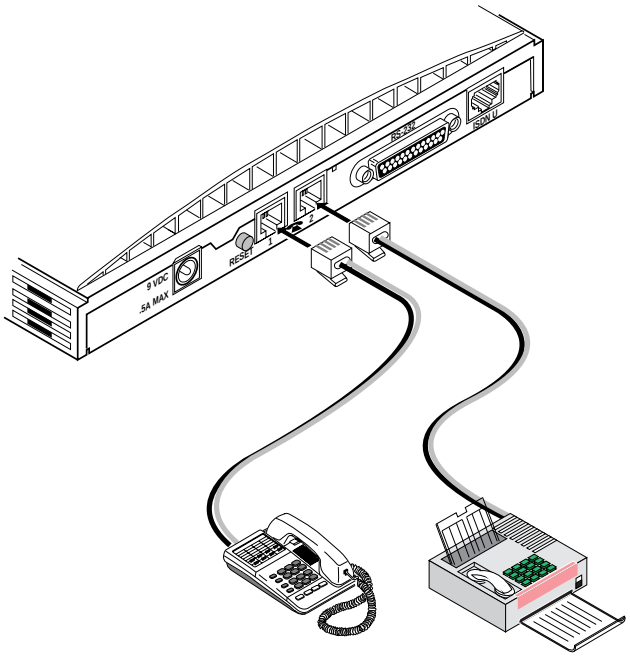


Figure 2-6 Analog Equipment Connection

2 Insert the other RJ-11 end into the appropriate RJ-11 port on the analog device.

3 If you have another analog device to install, repeat steps 1 and 2.

CAUTION: *The 3C882 ISDN modem is designed to operate with telephones that are compatible with the original AT&T® 2500 touch-tone telephone standard. 3Com guarantees proper operation of compatible touch-tone devices that do not exceed a total ringer equivalency number (REN) of three per analog port. The 3C882 ISDN modem is designed to provide power and ringing for these three devices on up to 200 feet of AWG 26 or heavier AWG wiring. Although the 3C882 ISDN modem may function satisfactorily at longer cable distances with more than two attached telephones, proper operation at longer cable distances is not guaranteed in all situations.*

Downloaded from www.Manualslib.com manuals search engine

Specialized telephone equipment such as speaker phones that draw large amounts of power may not work on the 3C882 ISDN modem's Phone port. Because these devices do not conform to the power specification of the 2500 touch-tone telephone standard, their operation is not guaranteed.

Installing the Power Cable

To install the power cable:

1 **Connect the 3C882 ISDN modem power cable to the 9 VDC power connector on the back panel of the ISDN modem, as shown in Figure 2-7.**

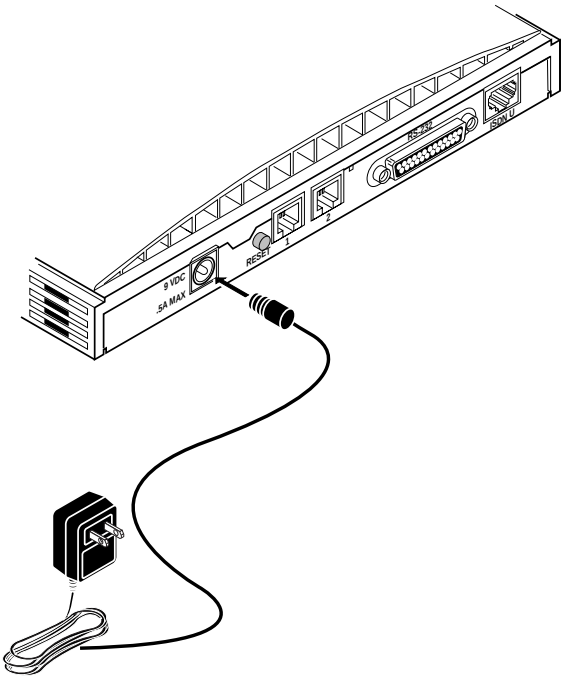


Figure 2-7 Power Cable Connection

2 **Plug the transformer end of the power cable into a surge-protected standard 110 VAC wall outlet.**

The indicator LEDs on the front panel (see Figure 2-2) flash momentarily as the unit undergoes a power-up self-test diagnostic.

Downloaded from www.Manualslib.com manuals search engine

This completes the 3C882 ISDN modem installation.

Refer to the appropriate chapter to configure the 3C882 ISDN modem; either Chapter 3, "Configuration for an IBM-Compatible PC Running Windows," or Chapter 4, "Configuration for an Apple Macintosh Computer."

Downloaded from www.Manualslib.com manuals search engine

3 Configuration for an IBM-Compatible PC Running Windows

This chapter describes the 3C882 ISDN modem configuration for use with the Windows operating system. Main topics are as follows:

- Configuring the 3C882 ISDN modem
- Setup using Windows 95
- Setup using Windows NT 3.5.1
- Setup using Windows NT 4.0
- Configuring Dial-Up Networking
- Setup for 230Kbps

For instructions on using the DOS operating system, refer to Appendix D.

Configuring the 3C882 ISDN Modem for a PC

The main steps are shown in Figure 3-1.

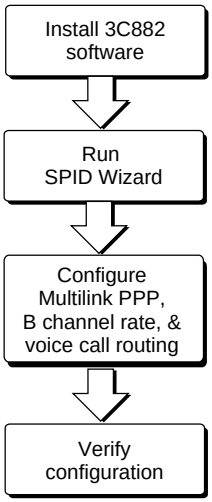

Install 3C882 software
Run SPID Wizard
Configure Multilink PPP, B channel rate, & voice call routing
Verify configuration

Figure 3-1 Main Configuration Steps for a PC

Downloaded from www.Manualslib.com manuals search engine

Installing the 3C882 Software

To install the 3C882 ISDN modem software:

1 Insert the *3ComImpact IQ Windows Installation Diagnostic Utilities* diskette into an available floppy drive.

2 If you are using Windows 95, select *Run* from the *Start* menu. If you are using Windows 3.x, select *Run* from the *File* menu. In the Run dialog box shown in Figure 3-2, type:

```
a:\setup
```

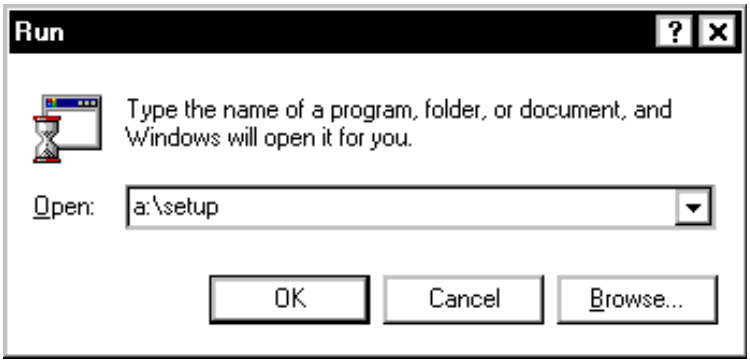


Figure 3-2 Run Dialog Box

3 Click *OK*.

After the configuration program is copied to the hard disk, a welcome screen opens, as shown in figure Figure 3-3.

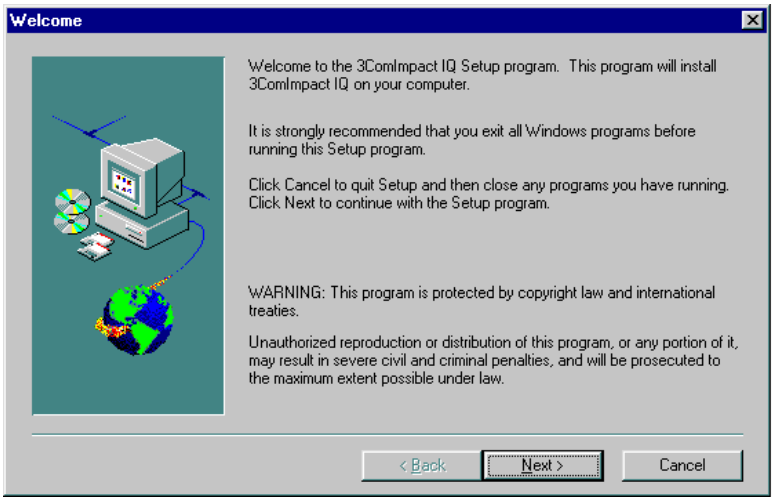

Welcome
Welcome to the 3ComImpact IQ Setup program. This program will install 3ComImpact IQ on your computer.
It is strongly recommended that you exit all Windows programs before running this Setup program.
Click Cancel to quit Setup and then close any programs you have running. Click Next to continue with the Setup program.
WARNING: This program is protected by copyright law and international treaties.
Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.
< Back
Next >
Cancel

Figure 3-3 Welcome Screen for PC

Downloaded from www.Manualslib.com manuals search engine

4 Click *Next* to continue the installation.

You will then be prompted to choose the directory in which to install the software.

5 If you would like to designate a directory other than the default directory, click Browse to do so. Otherwise, click *Next* to install the 3ComImpact IQ into the default directory.

If you are running Windows 3.x, a message box appears and asks you whether you want to install a Microkey COM port enhancement driver for data transfer rates up to 115.2 Kbps. This driver will replace your existing COM port driver. If you receive the following message during the Microkey installation procedure:

`ERROR DURING INSTALLATION, ERROR CODE` *XX*

please record the error code (shown as XX *above) and refer to "" on page 8-7 for an explanation of the error code and the corrective action to take.*

After the setup program has completed installation, you are asked to view the Readme file.

6 Click *Yes* to review this file.

You may choose File and Print to create a hardcopy of the Readme. Otherwise, read the file and exit. A message box confirms that the installation is complete.

7 Click *OK* to complete the installation.

Running the SPID Wizard

The SPID Wizard automatically detects your telephone company's switch type and configures the SPID(s).

You will need the ISDN telephone numbers from the ISDN Information Sheet you completed in Chapter 1.

Downloaded from www.Manualslib.com manuals search engine

1 Double-click the 3ComImpact IQ icon shown in Figure 3-4.

Figure 3-4 3ComImpact IQ Globe Icon

You will see a start message, as shown in Figure 3-5.

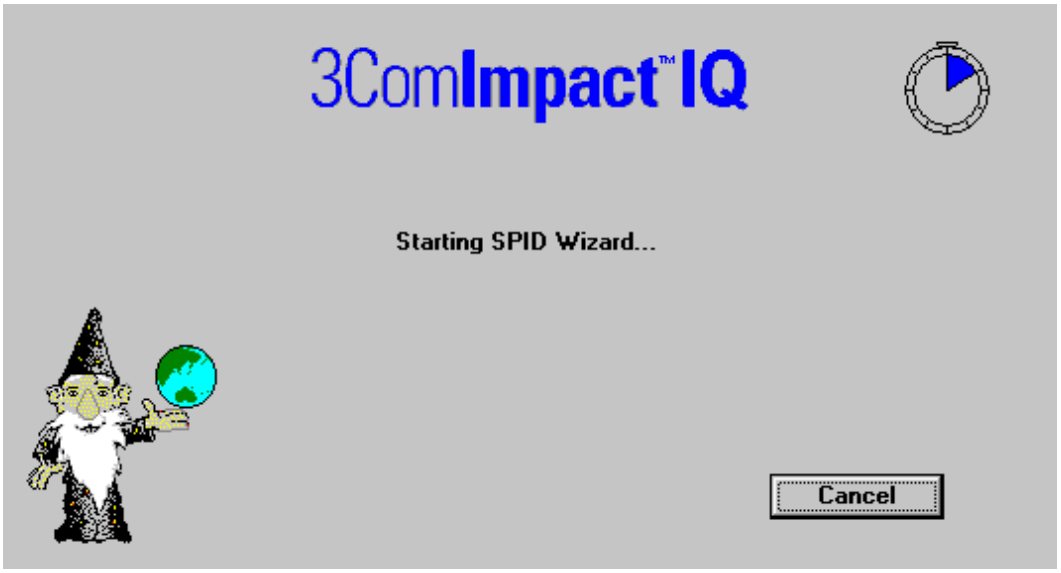


Figure 3-5 SPID Wizard Start Message for PC

If you do not want to run the SPID Wizard, click Cancel to configure your values manually via the configuration dialog box (see Figure 3-9). Here you can select your ISDN switch type, enter the telephone number(s) and, if required, enter the corresponding SPID(s) for your ISDN line. Note that running the SPID Wizard is the recommended method for configuring your SPID values.

The SPID Wizard first checks for ISDN layer 1status, and then configures the switch type.

Downloaded from www.Manualslib.com manuals search engine

After the switch type is configured, the dialog box for the first telephone number appears, as shown in Figure 3-6.

Figure 3-6 First Telephone Number Dialog Box for PC

2 Enter the first telephone number for your ISDN line.

3 Click *Next*.

A message appears, indicating that the 3C882 ISDN modem is detecting the SPID for the first telephone number.

Downloaded from www.Manualslib.com manuals search engine

After the SPID is configured, the dialog box shown in Figure 3-7 appears.

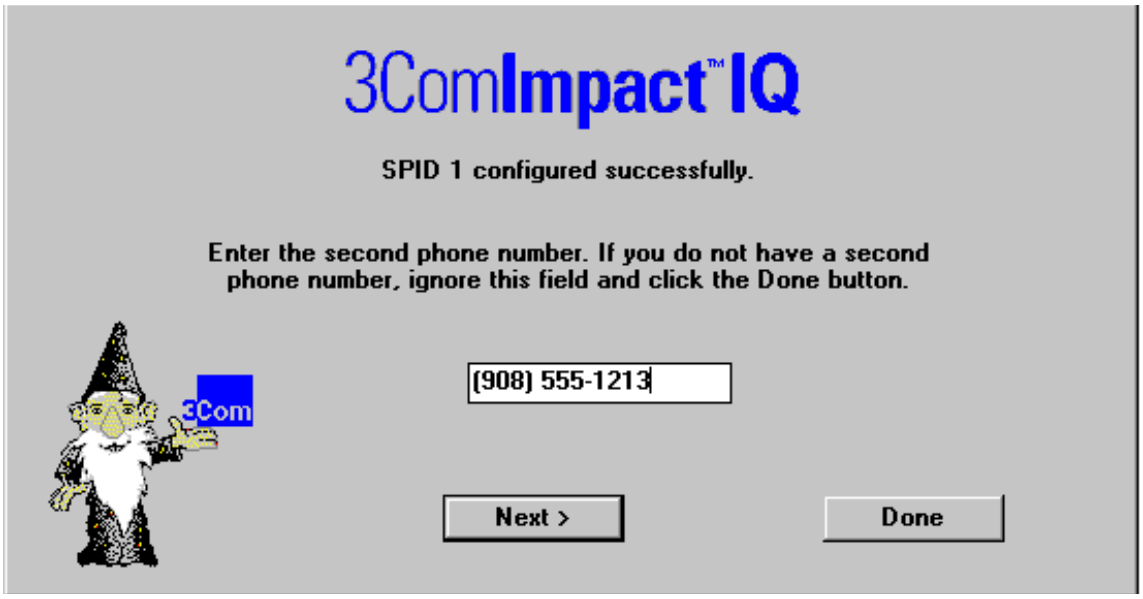

3ComImpact™ IQ
SPID 1 configured successfully.
Enter the second phone number. If you do not have a second phone number, ignore this field and click the Done button.
(908) 555-1213
Next >
Done

Figure 3-7 Second Telephone Number Dialog Box for PC

4 If you have a second telephone number for your ISDN line, enter it, and then click *Next*. If not, leave the field incomplete, and then click *Done*.

After successful configuration of your switch type and SPID number(s), Figure 3-8 appears.

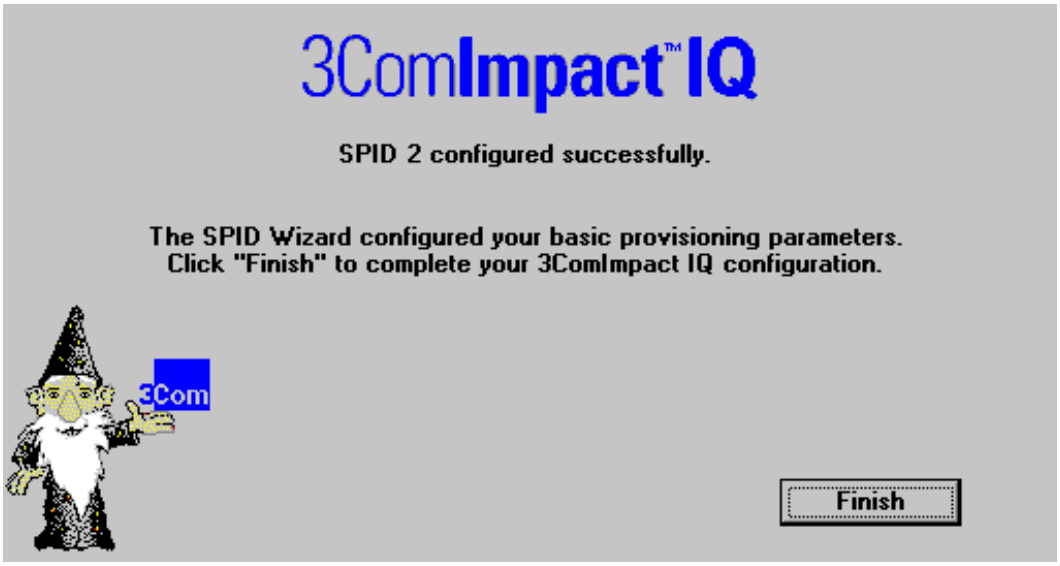

3ComImpact™ IQ
SPID 2 configured successfully.
The SPID Wizard configured your basic provisioning parameters.
Click "Finish" to complete your 3ComImpact IQ configuration.
Finish

Figure 3-8 Successful Configuration Dialog Box

Downloaded from www.Manualslib.com manuals search engine

5 Click *Finish*.

The on-line registration dialog box appears. Enter your information and then click *Register Now*.

After your information is received, the Successful Registration dialog box will open.

6 Click *OK*.

A message box indicates that you have correctly configured your 3C882 ISDN modem.

7 Click *No* to verify your settings and continue the setup procedure (recommended). To exit the installation program and leave the default settings, click *Yes*.

If you clicked *No*, the Configuration dialog box will open, as shown in Figure 3-9.

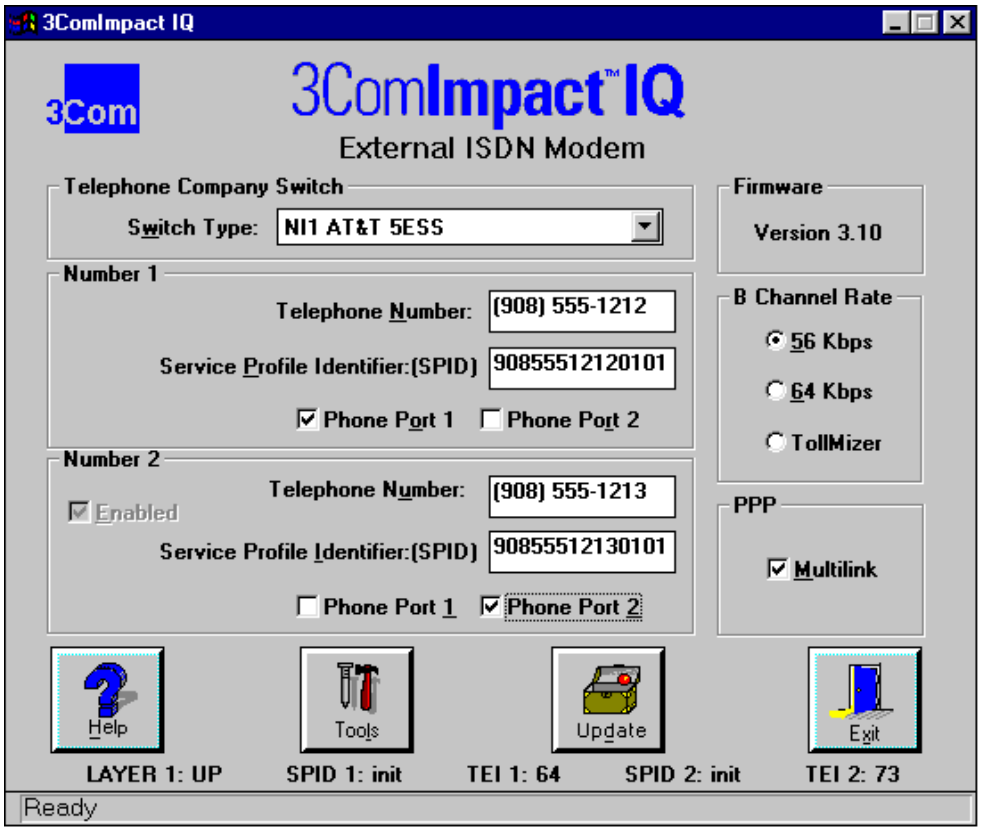


Figure 3-9 Configuration Dialog Box for PC

Downloaded from www.Manualslib.com manuals search engine

A message bar at the bottom of the dialog box provides status information about the 3C882 ISDN modem.

The Configuration dialog box buttons do the following.

Help. Click the *Help* button to access help for the Configuration dialog box. There is also comprehensive on-line help accessible from the 3ComImpact IQ program group box.

Tools. Clicking on the *Tools* button produces buttons for *Firmware*, *Tests*, *Save* and *Restore*.

- **Firmware.** Refer to the readme file for firmware download instructions.
- **Tests.** Use the *Tests* tool only under the direction of technical support personnel.
- **Save.** Pressing the *Save* button saves the current Configuration dialog box settings in a file you name. You can easily restore a previously saved file to the Configuration dialog box.
- **Restore.** Pressing the *Restore* button restores the 3C882 ISDN modem to a previously saved configuration file.

Update. Click the *Update* button to download any configuration parameter changes made to the Configuration dialog box. After you click the *Update* button, the name changes to *Updated* to indicate that the changes have been saved to your ISDN modem's S registers.

Exit. Click *Exit* to leave the Configuration dialog box.

Running the SPID Wizard Again

The SPID Wizard automatically runs when you are configuring the 3C882 ISDN modem for the first time, if you connect the 3C882 ISDN modem to a different ISDN line, or if your ISDN line parameters should change (e.g., your area code). After the ISDN switch type, telephone number(s), and

Downloaded from www.Manualslib.com manuals search engine

SPID(s) are configured, clicking on the 3ComImpact IQ globe icon will thereafter display the Configuration dialog box.

If you add a second telephone number to your ISDN line after you run the SPID Wizard, you can use the SPID Wizard to detect the SPID for your second telephone number.

To run the SPID Wizard for a second telephone number:

1 **From the Configuration dialog box, check the *Enabled* box located in the Number 2 group box.**

A message box appears and asks you to confirm that you want to run SPID Wizard.

2 **Click *OK*.**

The Second Telephone Number dialog box appears.

3 **Enter the second telephone number for your ISDN line and then click *Next*.**

Figure 3-8 appears.

4 **Click *Finish*.**

Configuring Multilink PPP

Multilink PPP is a protocol that provides a method for combining multiple PPP connections. Multilink PPP combines the two ISDN B channels, creating a virtual single digital connection of up to 128 Kbps. Note that the destination you are dialing must also support Multilink PPP, or you will get a single B channel connection instead of the dual-channel link.

By default, Multilink PPP is enabled. To enable or disable Multilink PPP, do the following:

1 **Click inside the Multilink check box in the PPP area to clear it (disable) or check it (enable).**

2 **Click the *Update* button to download the change to your 3C882 ISDN modem's S register.**

Downloaded from www.Manualslib.com manuals search engine

Additional configuration may be needed for Multilink PPP. For details refer to S registers 82 and 83 in Appendix B, "AT Commands, S Registers, and Result Codes".

Note that if you disable Multilink PPP (i.e., Register S80=0), you can still place a Multilink PPP call without changing the S 80 register value. In the dial string, enter the first telephone number, then the ampersand character followed by the second telephone number. For example:

```
ATD 908 555 1212 & 908 555 1213
```

Configuring the B Channel Rate

Specify the B channel rate as 56 Kbps, 64 Kbps, or select TollMizer if you would like to use that feature. TollMizer allows you to place a 56 Kbps data call using a voice channel, which is often less expensive. Note that the device you are calling must also support TollMizer (sometimes referred to as Switch 56 Permissive or Data Over Voice) to take advantage of this feature.

By default, the B channel rate is 56 Kbps. Check with your telephone company for the appropriate B channel rate.

To change the connection speed to 64 Kbps or TollMizer, do the following:

1. **Select the appropriate radio button (64 Kbps or TollMizer).**
2. **Click the *Update* button to download the change to your 3C882 ISDN modem's S register.**

Configuring Voice Call Routing

The 3C882 ISDN modem allows you to assign a specific telephone number to a specified analog phone port. By default, telephone number 1 is assigned to phone port one, and telephone number 2 is assigned to phone port two, as shown in Figure 3-10. This is especially helpful should you

Downloaded from www.Manualslib.com manuals search engine

have both a telephone and a fax machine connected to your 3C882 ISDN modem's analog ports.

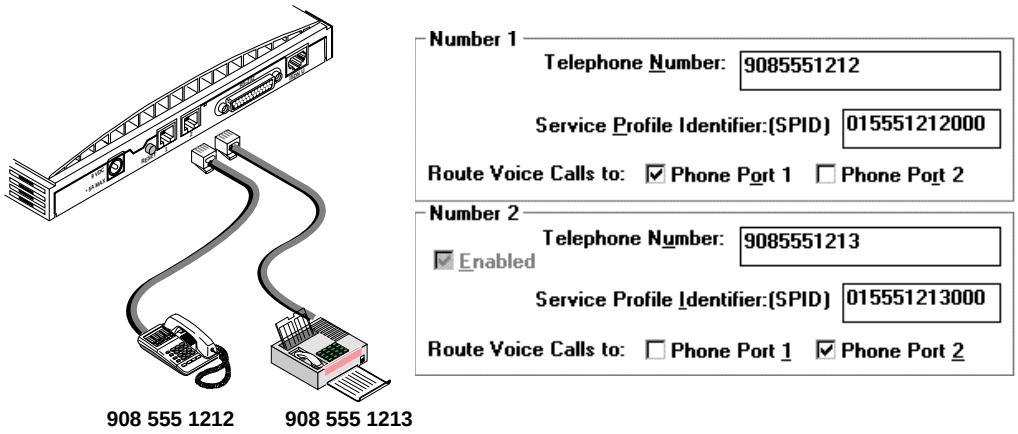

Number 1
Telephone Number: 9085551212
Service Profile Identifier:(SPID) 015551212000
Route Voice Calls to: Phone Port 1 Phone Port 2
Number 2
Telephone Number: 9085551213
Enabled
Service Profile Identifier:(SPID) 015551213000
Route Voice Calls to: Phone Port 1 Phone Port 2
908 555 1212
908 555 1213

Figure 3-10 Voice Call Routing Default Setting

Note the phone port check marks for each telephone number. This default configuration routes each telephone number to a specified port.

The ISDN Call Waiting default configuration is best served by the recommended scenario shown in Figure 3-10. By default, ISDN Call Waiting has been enabled on Phone Port 1, for use with your telephone, but disabled on Phone Port 2 to prevent potential interruption of calls to your fax machine (S76=1).

One Telephone Number and Two Analog Devices.

If you have only one telephone number for your ISDN line and two analog devices, check the Phone Port 1 and Phone Port 2 boxes located in the Number 1 group box, as shown in Figure 3-11. Calls to that telephone number will ring both devices, allowing you to answer a call using either device.

Downloaded from www.Manualslib.com manuals search engine

Note that while you are using the fax machine, for example, you cannot use the telephone to place or receive calls because your ISDN line has only one telephone number.

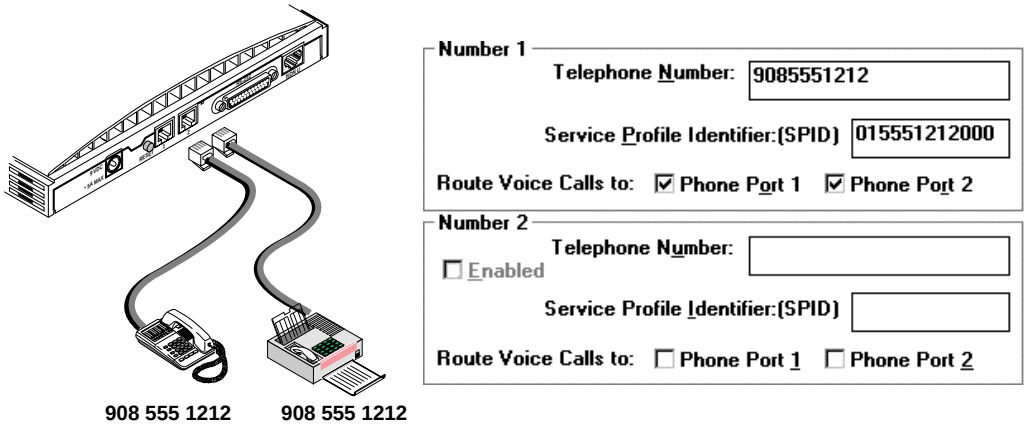


Figure 3-11 Configuration for One Telephone Number and Two Devices

Two Telephone Numbers and Two Analog Devices.

If you have two telephone numbers and two analog devices attached to your 3C882 modem, you can choose to have both ISDN telephone numbers ring both devices simultaneously. For this scenario, you would place a checkmark in all four Phone Port boxes, as shown in Figure 3-12

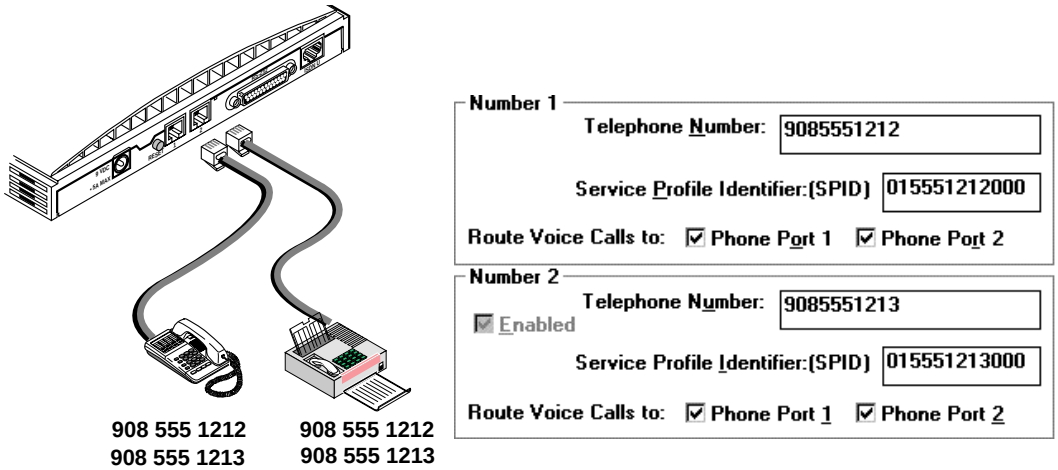


Figure 3-12 Configuration for Two Telephone Numbers and Two Analog Devices

Downloaded from www.Manualslib.com manuals search engine

To change the voice call routing setting:

1. **Specify which Phone port should handle the calls associated with Telephone Number 1 by checking the appropriate Phone Port box.**
2. **If your ISDN line has two telephone numbers, specify which Phone port should handle the calls associated with Telephone Number 2.**
3. **Click the *Update* button to download the change to your 3C882 ISDN modem's S register.**

Verifying the Configuration

Check the status bar located toward the bottom of the Configuration dialog box. If the parameters were configured accurately and the 3C882 ISDN modem is ready to send and receive calls, the status bar fields will appear as shown here.

- Layer 1: UP
- SPID 1: Init (if required)
- TEI 1: Number from 64 to 126
- SPID 2: Init (if required)
- TEI 2: Number from 64 to 126 (if required)

The TEI number(s) are not configured by the user. The TEI number(s) are transmitted by the telephone company for informational purposes only.

Before you close the Configuration dialog box, do the following.

1. **Confirm that the Configuration parameters are correct.**

Downloaded from www.Manualslib.com manuals search engine

2 Click the *Update* button if you made any changes to the 3C882 ISDN modem configuration.

3 Click *Exit* to leave the utility.

This completes the ISDN modem configuration procedure.

For Windows 3.x users, go to Chapter 5, "Advanced Configuration," and review the default settings to ensure that they reflect your preferences. If you prefer not to change the default settings, go on to Chapter 7, "Placing and Receiving Calls".

If you are using Windows 95, Windows NT 3.5.1, or Windows NT 4.0, refer to the appropriate section, "Setup Using Windows 95", "Setup Using Windows NT 3.5.1 RAS", or "Setup for Windows NT 4.0" for additional instructions.

For information regarding configuration of the 3C882 ISDN modem with various Internet access software not included in this User Guide, use the 3Com fax service (1) (408) 727-7021 (analog) in the U.S. or visit 3Com's World Wide Web site at http://www.3Com.com/.

Downloaded from www.Manualslib.com manuals search engine

Setup Using Windows 95

This section describes how to set up the 3C882 ISDN modem using Windows 95 Plug and Play. These instructions assume that Windows 95, Microsoft Plus!, and the 3C882 ISDN modem software have already been installed.

To setup your 3C882 ISDN manually and bypass Windows 95 Plug and Play, refer to the section "Setup for Windows NT 4.0" below.

1 Reboot your PC with the 3C882 ISDN modem powered up and physically connected to your PC.

The New Hardware dialog box appears, shown in Figure 3-13.

New Hardware Found
Unknown Device
Select which driver you want to install for your new hardware:
Windows default driver
Driver from disk provided by hardware manufacturer
Do not install a driver (Windows will not prompt you again)
Select from a list of alternate drivers
OK
Cancel
Help

Figure 3-13 New Hardware Dialog Box

2 Select the *Driver from disk provided by hardware manufacturer* option.

3 Click *OK*.

Downloaded from www.Manualslib.com manuals search engine

The Install From Disk dialog box appears, as shown in Figure 3-14.

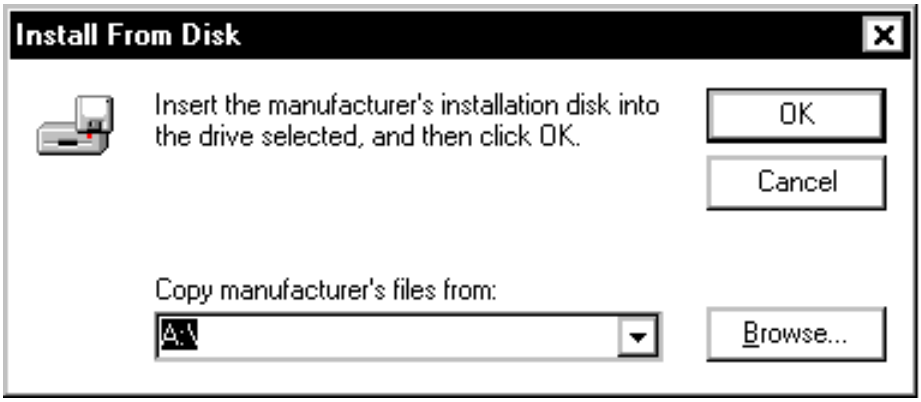


Figure 3-14 Install From Disk Dialog Box

4 Insert the *3ComImpact IQ Windows Installation Diagnostic Utilities* diskette into an available floppy drive.

5 Click *OK*.

The Select Device dialog box appears, as shown in Figure 3-15.

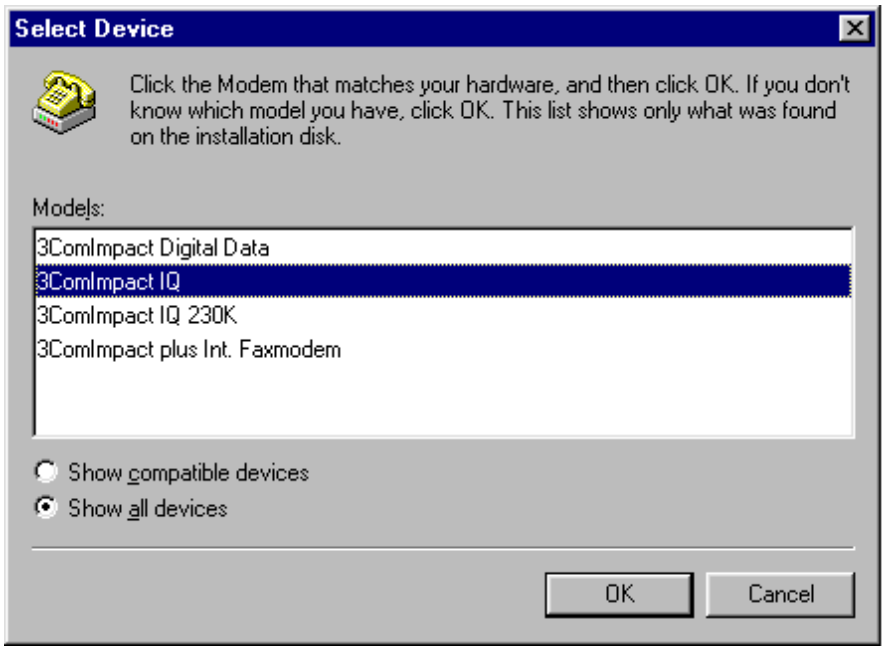

Select Device
Click the Modem that matches your hardware, and then click OK. If you don't know which model you have, click OK. This list shows only what was found on the installation disk.
Models:
3ComImpact Digital Data
3ComImpact IQ
3ComImpact IQ 230K
3ComImpact plus Int. Faxmodem
Show compatible devices
Show all devices
OK
Cancel

Figure 3-15 Select Device Dialog Box

Downloaded from www.Manualslib.com manuals search engine

6 Check *Show All Devices*.

7 Select *3ComImpact IQ* for baud rates of up to 115.2Kbps and click *Next*.

The 3C882 ISDN modem allows for transfer rates of up to 230.4 Kbps. However, some computers require the installation of additional hardware, such as an accelerated serial port card, to take advantage of this higher speed. Additional configuration steps, as well, are required. Refer to "Setup for 230Kbps" for instructions.

8 Click *OK*.

This completes the setup procedure for Windows 95. Refer to "Configure Dial-Up Networking" to setup a remote access configuration, or continue on to Chapter 5, "Advanced Configuration," to review the default settings and ensure that they reflect your preferences. If you prefer not to change the default settings, then go on to Chapter 7, "Placing and Receiving Calls".

Setup Using Windows NT 3.5.1 RAS

This section describes how to set up the 3C882 ISDN modem using Windows NT RAS version 3.5.1. Note that these instructions assume that the 3C882 ISDN modem software has already been installed.

1 Using the File Manager, locate the Windows NT MODEM.INF file in the %SystemRoot%/System32/RAS directory and rename it MODEM.ORG.

For example, if your root directory is Windows, you would look for the Windows NT MODEM.INF file in the following directory:

```
C:\windows\System32\RAS
```

Downloaded from www.Manualslib.com manuals search engine

2 Copy the 3C882 ISDN modem MODEM.INF file to the same directory as the MODEM.ORG file.

3 From the main menu, select *Control Panel*, and then select *Network*.

The Network Settings dialog box appears, as shown in Figure 3-16.

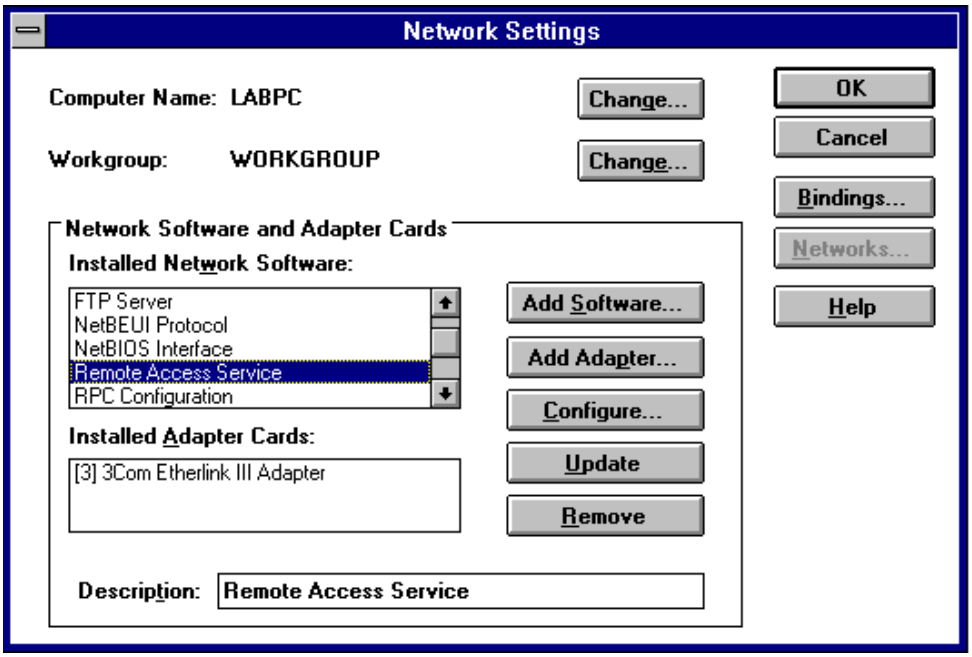


Figure 3-16 Network Settings Dialog Box

4 From the Installed Network Software list box, select *Remote Access Service* and then click *Configure*.

Downloaded from www.Manualslib.com manuals search engine

The Remote Access Setup dialog box appears, as shown in Figure 3-17.

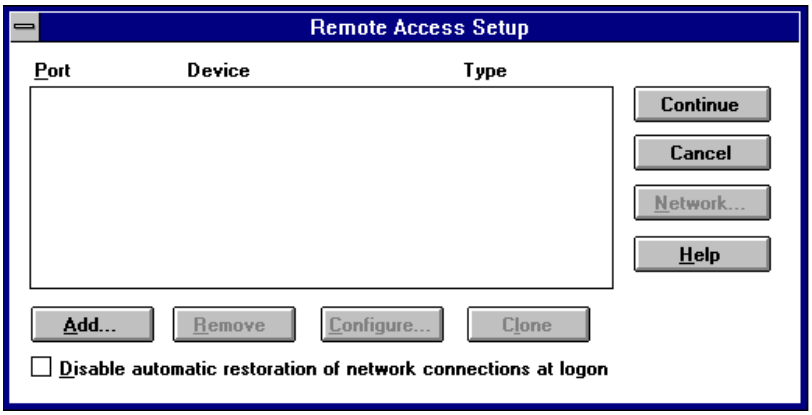


Figure 3-17 Remote Access Setup Dialog Box

5 If a modem is already configured, select it, and then click *Remove*.

6 Click *Add*.

The Add Port dialog box appears.

7 Select a COM port, and then click *OK*.

The Remote Access Setup message box appears.

8 Click *Cancel*.

The Configure Port dialog box appears.

9 Select *3ComImpact IQ* for baud rates up to 115.2 Kbps and then specify the port usage. Click *OK*.

The 3C882 ISDN modem allows for transfer rates of up to 230.4 Kbps. However, some computers require the installation of additional hardware, such as an accelerated serial port card, to take advantage of this higher speed. Additional configuration steps, as well, are required. Refer to "Setup for 230Kbps" for instructions.

The Remote Access Setup dialog box appears.

Downloaded from www.Manualslib.com manuals search engine

10 Click *Continue*.

11 Click *OK* to exit the Network Settings dialog box.

The Network Settings Change alert box appears.

12 Click *Restart Now*.

Once your computer has rebooted, you are ready to use the 3C882 ISDN modem.

Refer to Chapter 5, "Advanced Configuration," to review the default settings and ensure that they reflect your preferences. If you prefer not to change the default settings, then go on to Chapter 7, "Placing and Receiving Calls".

Setup for Windows NT 4.0

This section describes how to set up the 3C882 ISDN modem using Windows NT 4.0. Note that these instructions assume that the 3C882 ISDN modem software has already been installed.

These instructions also apply for Windows 95 manual setup.

1 Insert the *3ComImpact IQ Windows Installation Diagnostic Utilities* diskette into an available floppy drive.

2 From the Control Panel dialog box, double-click the *Modems* icon.

The Modems Properties dialog box appears.

3 Click *Add*.

The Install New Modem dialog box appears, as shown in Figure 3-18.

Downloaded from www.Manualslib.com manuals search engine

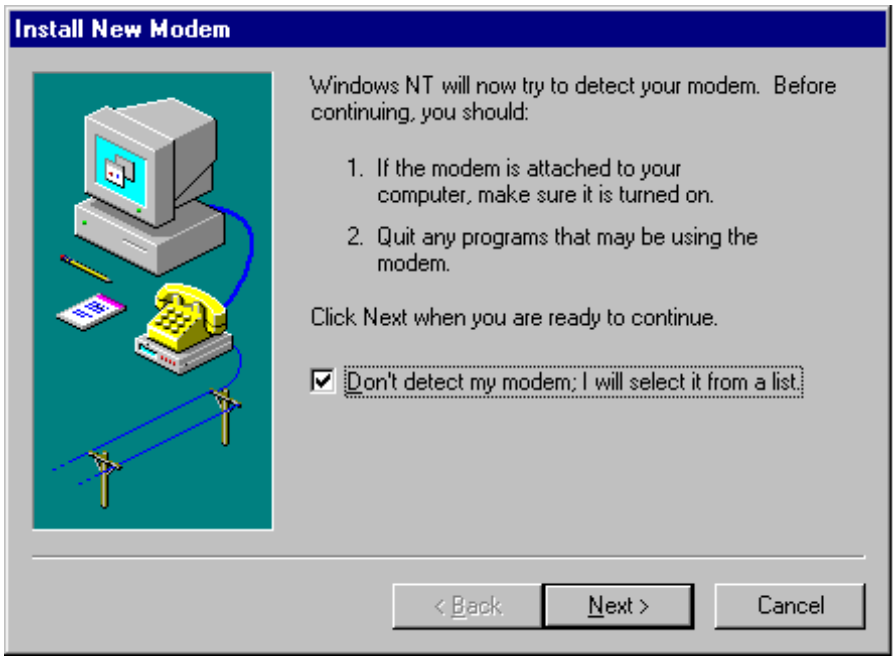

Install New Modem
Windows NT will now try to detect your modem. Before continuing, you should:
1. If the modem is attached to your computer, make sure it is turned on.
2. Quit any programs that may be using the modem.
Click Next when you are ready to continue.
Don't detect my modem; I will select it from a list.
< Back
Next >
Cancel

Figure 3-18 Install New Modems Dialog Box

4 Check *Don't detect my modem, I will select it from a list* and click *Next*.

Downloaded from www.Manualslib.com manuals search engine

The New Modem Manufacture screen will open, as shown in Figure 3-19.

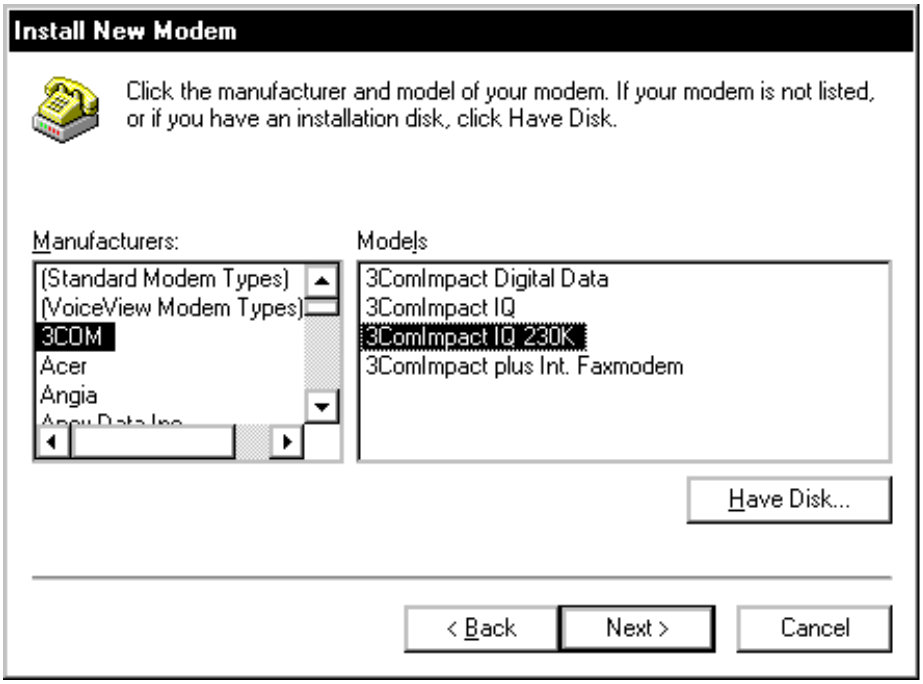


Figure 3-19 Modem Manufacturers and Models Dialog Box

You will only see a 3Com entry if you have previously installed a 3Com modem.

5 Click *Have Disk*.

6 Select 3ComImpact IQ for baud rates of up to 115.2K and click *Next*.

The 3C882 ISDN modem allows for transfer rates of up to 230.4 Kbps. However, some computers require the installation of additional hardware, such as an accelerated serial port card, to take advantage of this higher speed. Additional configuration steps, as well, are required. Refer to "Setup for 230Kbps" for instructions.

7 Select the appropriate COM port to which your modem is connected.

8 Click *Next*.

Downloaded from www.Manualslib.com manuals search engine

A dialog box indicates successful setup.

9 Click *Finish*.

This completes the setup procedure for Windows NT 4.0. Refer to "Configure Dial-Up Networking" below to setup a remote access configuration, or continue on to Chapter 5, "Advanced Configuration," to review the default settings and ensure that they reflect your preferences. If you prefer not to change the default settings, then go on to Chapter 7, "Placing and Receiving Calls".

Configure Dial-Up Networking

This section describes the Dial-Up Networking setup procedure for both Windows 95 and Windows NT 4.0

Dial-Up Networking setup requires specific Internet Service Provider (ISP) information; your particular setup parameters may vary widely. You may need to check with your ISP for assistance.

Dial Up Networking for Windows 95

If you would like to connect to the Internet, you can choose to have the Internet Setup Wizard to guide you through the procedure or you may choose to configure Dial-Up Networking manually for other remote connections.

To configure Dial-Up Networking manually:

1 From the *Start* menu, select *Programs*, *Accessories*, and *Dial-Up Networking*.

The Dial-Up Networking window opens.

2 Double click the *Make New Connection* icon.

3 Enter a name for this connection (such as your ISP).

4 Select *3ComImpact IQ* for baud rates up to 115.2 Kbps.

Downloaded from www.Manualslib.com manuals search engine

If you have not already set up the modem for 230K, refer to "Setup for 230Kbps" for assistance.

5 **Click *Configure*.**

The 3ComImpact IQ Properties window opens.

6 **Select the appropriate COM port and maximum speed available for your computer.**

7 **Click *OK*.**

You are returned to the Make New Connection screen.

8 **Click *Next*.**

Enter the area code, telephone number and (if necessary) the country code of the location you are dialing.

9 **Click *Next*.**

10 **Click *Finish*.**

To make a call, double click the connection icon for the destination you wish to access. A connection dialog box will open.

11 **Click *Connect*.**

Once your call has been established, you may open any web browser to access the Internet.

Running the Internet Set-Up Wizard

The Internet Set-Up Wizard automates the configuration procedure for connecting to the Internet. You will need the following information, which your Internet Service Provider (ISP) should supply:

- Name of you ISP
- Your ISP access number
- Your user name and password
- IP Address (if required)

Downloaded from www.Manualslib.com manuals search engine

- Subnet Mask (if required)
- Primary and Alternate DNS Server address

To send and receive e-mail through the Internet:

- E-mail address
- Mail server address

To run the Internet Set-Up Wizard, do the following:

The Internet Set-Up Wizard procedure may vary depending on your particular version of Windows 95.

1 **Click *Start, Programs, Accessories, Internet Tools,* and *Internet Setup Wizard.***

2 **Click *Next* to view the Connection Type dialog box.**

3 **Select *Connect Using My Phone Line.* Click *Next* to view the Connection Type dialog box.**

4 **Choose to "Connect to the Internet using an Internet Service Provider".**

5 **Click *Next.***

If this is the first time you are running the Internet Setup Wizard, the Installing Files dialog box appears.

6 **Click *Next.***

The Choose Modem dialog box opens.

7 **Select *3ComImpact IQ* for baud rates of up to 115.2 Kbps or *3ComImpact IQ 230K* if you have installed an accelerated serial port for higher baud rates. You must have already followed specific setup instructions for operating at 230K.**

If you have not already set up the modem for 230K, refer to "Setup for 230Kbps" for assistance.

8 **Click *Next.***

Downloaded from www.Manualslib.com manuals search engine

The Service Provider dialog box opens.

9 Enter the name of your ISP and click *Next*.

The Phone number dialog box opens.

10 Enter the area code, telephone number and (if necessary) the country code of the location you are dialing.

11 Click *Next*.

The User Name and Password dialog box will open.

12 Enter your user name and password and click *Next*.

13 Configure as specified by your ISP and click *Next*.

14 Enter the IP address of your DNS server and click *Next*.

15 Choose the appropriate box to send and receive email through the Internet. Then enter your email address (e.g., *username@isp.com)* and your Internet mail server address.

16 Click *Next* and *Finish* to exit the Internet Setup Wizard.

This completes the setup procedure for the Internet Setup Wizard. Refer to Chapter 5, "Advanced Configuration," to review the default settings and ensure that they reflect your preferences. If you prefer not to change the default settings, then go on to Chapter 7, "Placing and Receiving Calls".

Dial-up Networking for Windows NT 4.0

To configure Dial-Up Networking for Windows NT 4.0, follow these instructions.

1 Click *Start*, *Programs*, *Accessories*, and *Dial-Up-Networking*. Click *New* to create a new connection.

Downloaded from www.Manualslib.com manuals search engine

The New Phonebook Entry screen opens, as shown in Figure 3-20.

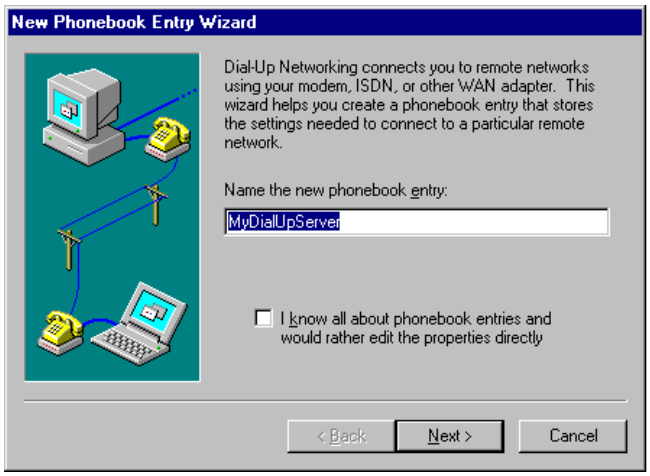

New Phonebook Entry Wizard
Dial-Up Networking connects you to remote networks using your modem, ISDN, or other WAN adapter. This wizard helps you create a phonebook entry that stores the settings needed to connect to a particular remote network.
Name the new phonebook entry:
MyDialUpServer
I know all about phonebook entries and would rather edit the properties directly
< Back
Next >
Cancel

Figure 3-20 New Phonebook Entry Wizard

If you have not yet configured a Dial-Up Networking connection, a message will indicate that your phonebook is empty. Click OK to add an entry.

2 Type a name for your connection, and click *Next*.

3 Select "I'm calling the Internet" and click *Next*.

4 Enter your ISP's ISDN access number, and click *Next*.

5 Click *Finish* to close the New Phonebook Entry Wizard.

The Phonebook entry screen opens, as shown in Figure 3-21.

Downloaded from www.Manualslib.com manuals search engine

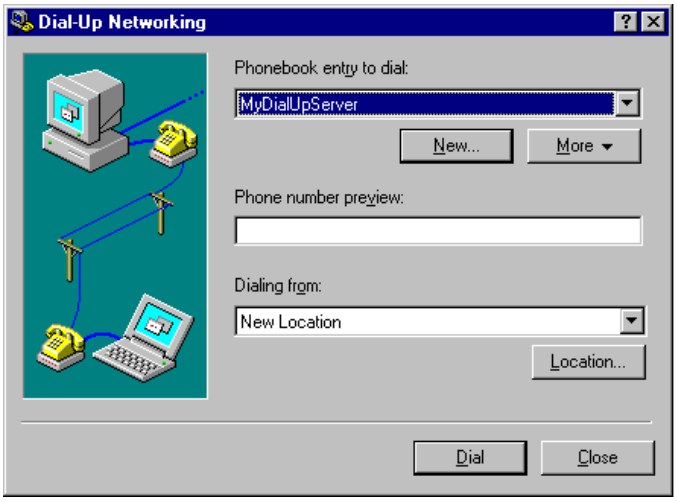


Figure 3-21 Phonebook Entry Screen

You now have an opportunity to verify various settings of your Dial-Up Networking connection.

6 Click *More*, and select "Edit entry and modem properties".

Verify your ISP's ISDN access number and your modem selection.

7 Click the *Server* tab. The Server Type screen opens, as shown in Figure 3-22.

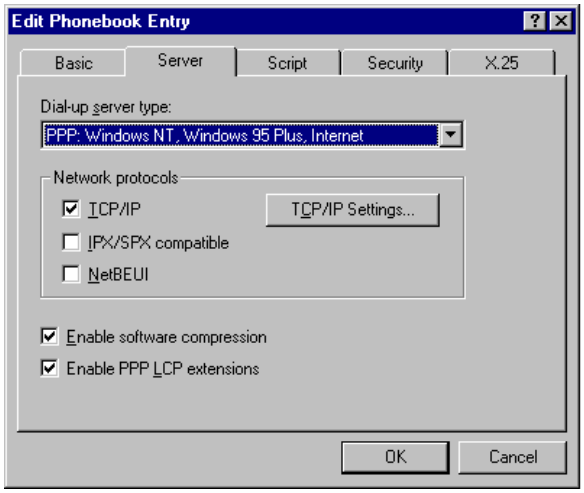


Figure 3-22 Server Type Screen

Downloaded from www.Manualslib.com manuals search engine

8 Choose "PPP: Windows NT, Windows 95 Plus, Internet" from the Dial-up server type drop down box.

9 Check *TCP/IP* if you are dialing into an ISP for Internet access.

If you are accessing a remote network, such as a corporate LAN, check with your MIS network administrator for the appropriate Network Protocols.

10 Click the *TCP/IP Settings* button.

In most cases your ISP will provide a dynamic IP address; if so check "Server assigned IP address". Enter your DNS and WINS server addresses if required.

If your ISP has assigned you a dedicated IP address, click "Specify an IP Address" and enter it here.

11 Click *OK* to return to the Phonebook Entry screen.

12 Click the *Script* tab. Set *Script* to *None* unless otherwise specified by your ISP.

13 Click the *Security* tab.

Change the Authentication method to "Accept any authentication, including clear text" for PAP authentication or "Accept Only Encrypted Authentication" for CHAP.

14 Click *OK*.

The 3C882 ISDN modem does not support Microsoft Encrypted Authentication. X.25 is not supported either; therefore, no changes are required on the X.25 screen.

This completes the Dial-Up Networking setup procedure for Windows NT 4.0. Refer to Chapter 5, "Advanced Configuration," to review the default settings and ensure that they reflect your preferences. If you prefer not to change the default settings, then go on to Chapter 7, "Placing and Receiving Calls".

Downloaded from www.Manualslib.com manuals search engine

Setup for 230Kbps

The 3C882 ISDN modem allows for transfer rates of up to 230.4 Kbps. Note that some computers require the installation of additional hardware, such as an accelerated serial port card, to take advantage of this higher speed.

There are two setup scenarios covered:

- 230K setup for Windows NT 3.5.1
- 230K setup for Windows 95 and Windows NT 4.0

Setting up 230K for Windows NT 3.5.1

These instructions require prior installation of the modem.inf driver, which is installed as part of the initial setup procedure. Refer to "Setup Using Windows NT 3.5.1 RAS" earlier in this chapter for assistance.

1 Ensure that your computer's COM port and communications software support 230.4 Kbps.

For instructions on sending AT commands, refer to the section "Changing the Parameter Settings" on page 5-4.

2 Using terminal emulation software send the command `AT $B 230400` to the 3C882 ISDN modem. This will set the baud rate to 230.4 Kbps.

Once the baud rate is set to a fixed amount you will no longer be able to access the Configuration dialog box to make changes. Refer to "Restoring the 3C882 ISDN Modem to Autobaud" on page 8-9 for assistance.

3 Save this setting by entering `AT&W` and press return.

Next you must install the 230K driver to take advantage of the speed increase.

Downloaded from www.Manualslib.com manuals search engine

4 **From the Main menu, select *Control Panel*, then select *Network*.**

The Network Settings dialog box appears.

5 **Click *Configure*.**

The Remote Access Setup dialog box appears.

6 **Click *Configure*.**

7 **Select *3ComImpact IQ 230K*.**

8 **Click *OK*.**

9 **Change the setting of your application program to 230400 bps.**

This completes the procedure to change the baud rate to 230.4 Kbps for Windows NT 3.5.1.

Refer to Chapter 5, "Advanced Configuration," to review the default settings and ensure that they reflect your preferences. If you prefer not to change the default settings, then go on to Chapter 7, "Placing and Receiving Calls".

Setting up 230K for Windows 95 and Windows NT 4.0

These instructions require prior installation of the impact.inf driver, which is installed as part of the initial setup procedure. Refer to "Setup Using Windows 95" or "Setup for Windows NT 4.0" earlier in this chapter for assistance.

1 **Ensure that your computer's COM port and communications software support 230.4 Kbps.**

For instructions on sending AT commands, refer to the section "Changing the Parameter Settings" on page 5-4.

2 **Using terminal emulation software (such as HyperTerminal) send the command `AT $B 230400` to the**

Downloaded from www.Manualslib.com manuals search engine

3C882 ISDN modem. This will set the baud rate to 230.4 Kbps.

Once the baud rate is set to a fixed amount you will no longer be able to access the Configuration dialog box to make changes. Refer to "Restoring the 3C882 ISDN Modem to Autobaud" on page 8-9 for assistance.

3 **Save this setting by entering `AT&W` and press return.**

Next you must install the 230K driver to take advantage of the higher baud rate.

4 **From the Control Panel dialog box, double click the *Modems* icon.**

The Modems Properties dialog box appears.

5 **Click *Add*.**

The Install New Modem dialog box appears.

6 **Check the box to prevent automatic detection of the 3ComImpact IQ ISDN modem and click *Next*.**

The dialog box listing modem manufacturers and modem models appears.

7 **From the Manufacturers list box, select *3COM*, and from the Models list box, select *3ComImpact IQ 230K*.**

8 **Click *Next*.**

9 **Select the appropriate COM port. and click *Next*.**

A dialog box indicates successful setup.

10 **Click *Finish*.**

11 **Be sure to change the setting of your application program (such as Dial-Up Networking for Windows 95) to 230400 bps.**

Downloaded from www.Manualslib.com manuals search engine

This completes the procedure to change the baud rate to 230.4 Kbps for Windows 95 and Windows NT 4.0.

Refer to Chapter 5, "Advanced Configuration," to review the default settings and ensure that they reflect your preferences. If you prefer not to change the default settings, then go on to Chapter 7, "Placing and Receiving Calls".

Downloaded from www.Manualslib.com manuals search engine

Downloaded from www.Manualslib.com manuals search engine

4 Configuration for an Apple Macintosh Computer

This chapter describes the configuration for the 3C882 ISDN modem for use with an Apple Macintosh computer. Main topics covered are:

- Configuring the 3C882 ISDN modem
- Configuring Internet access for a Macintosh computer

You will need the ISDN telephone numbers from the ISDN Information Sheet you completed in Chapter 1.

Configuring the 3C882 ISDN Modem for a Macintosh Computer

The main steps are shown in Figure 4-1.

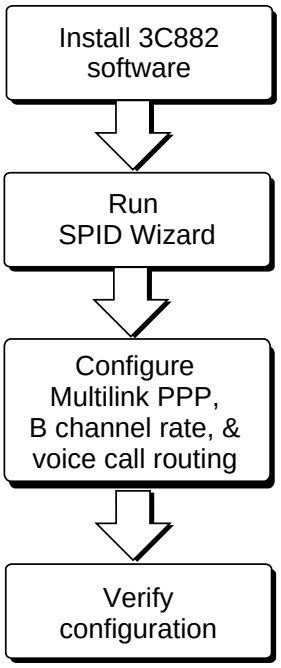

Install 3C882 software
Run SPID Wizard
Configure Multilink PPP, B channel rate, & voice call routing
Verify configuration

Figure 4-1 3C882 Configuration Steps for a Macintosh

Downloaded from www.Manualslib.com manuals search engine

Installing the 3C882 Software

To install the 3C882 ISDN modem software in an Apple Macintosh computer:

1 **Insert the *3ComImpact IQ Installer Diagnostic Utilities* software utility diskette into the floppy drive and then double-click the *3ComImpact IQ Installer* icon.**

A message box appears as shown in Figure 4-2.

Figure 4-2 Installation Message Box

2 **Click *Continue*.**

The Readme file opens. You can choose to review the document or print the file.

3 **Click *Continue* to install the software.**

The Software Installation Location dialog box opens.

4 **Select the location on your hard drive where you would like to install the 3ComImpact IQ folder. If you do not want to use the default folder name, it may be changed.**

5 **Click *Install*.**

After the 3ComImpact IQ ISDN modem software is installed, Figure 4-3 will open.

Downloaded from www.Manualslib.com manuals search engine

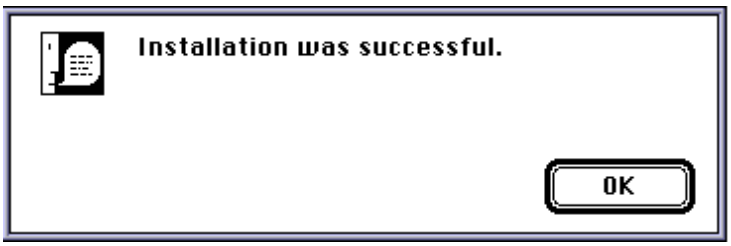


Figure 4-3 Successful Installation Message Box

6 Click *OK*.

This completes the software installation.

Running the SPID Wizard

The SPID Wizard automatically detects your telephone company's switch type and configures the SPID(s). The SPID Wizard automatically runs when you are configuring the 3C882 ISDN modem for the first time, if you connect the 3C882 ISDN modem to a different ISDN line, or if any of your ISDN line parameters have changed (e.g., an area code). Once the ISDN switch type, telephone number(s) and SPID(s) have been configured, clicking on the 3ComImpact IQ program icon will thereafter directly display the Configuration dialog box shown in Figure 4-9.

1 Double-click the 3ComImpact IQ program icon shown in Figure 4-4.

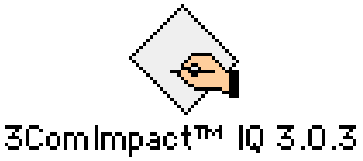


Figure 4-4 3ComImpact IQ Program Icon

Downloaded from www.Manualslib.com manuals search engine

The Select Modem Port screen appears, as shown in Figure 4-5.

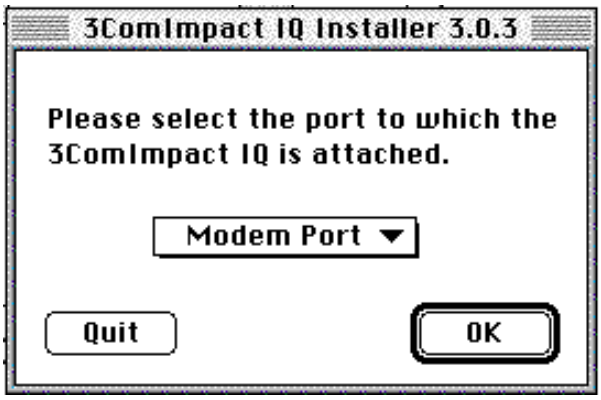


Figure 4-5 Select Modem Port Screen

2 Select the port to which the 3C882 ISDN modem is connected and then click *OK*.

The SPID Wizard start screen appears, as shown in Figure 4-6.

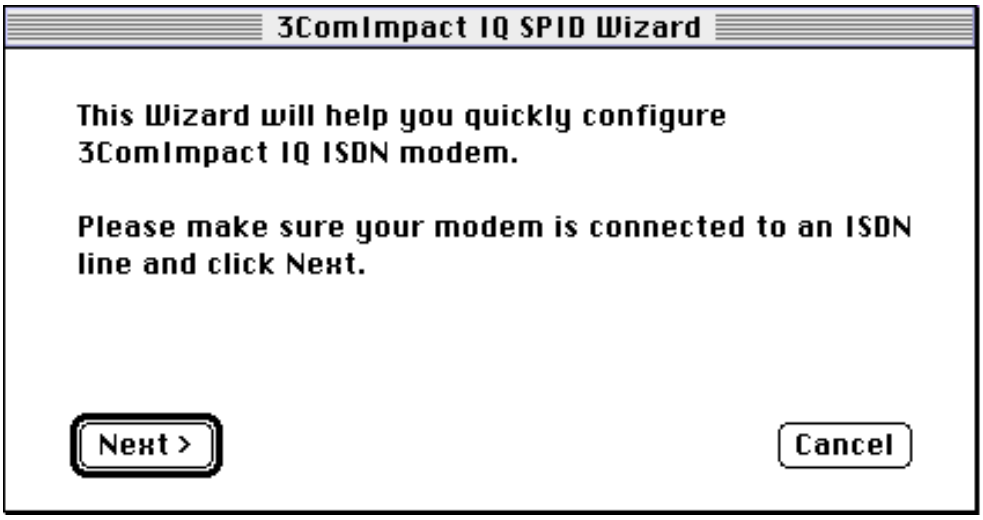

3ComImpact IQ SPID Wizard
This Wizard will help you quickly configure 3ComImpact IQ ISDN modem.
Please make sure your modem is connected to an ISDN line and click Next.
Next >
Cancel

Figure 4-6 SPID Wizard Start Screen

If you do not want to run the SPID Wizard, click Cancel *to configure your values manually via the configuration dialog box (see Figure 4-9). Once there you can select your ISDN switch type, enter the telephone number(s) and, if required, enter the corresponding SPID(s) for your ISDN line. Note that*

Downloaded from www.Manualslib.com manuals search engine

the SPID Wizard is the recommended method for configuring your SPID values.

3 Click *Next*.

The SPID Wizard first checks for ISDN layer 1status, and then configures the switch type.

After the switch type is configured, the First Telephone Number dialog box appears, as shown in Figure 4-7.

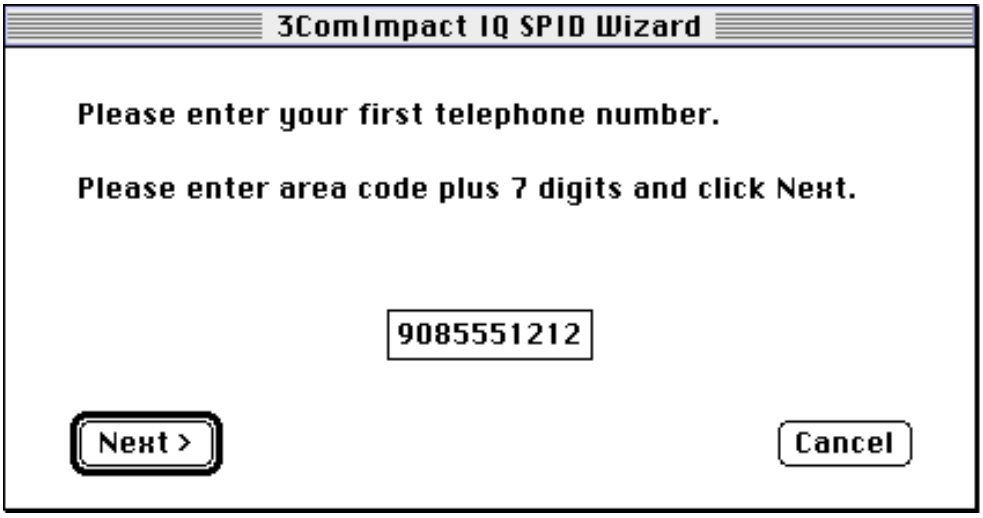

3ComImpact IQ SPID Wizard
Please enter your first telephone number.
Please enter area code plus 7 digits and click Next.
9085551212
Next >
Cancel

Figure 4-7 First Telephone Number Screen for Macintosh

4 Enter the first telephone number for your ISDN line and then click *Next*.

Downloaded from www.Manualslib.com manuals search engine

After the SPID Wizard configures the SPID for the first telephone number, Figure 4-8 appears.

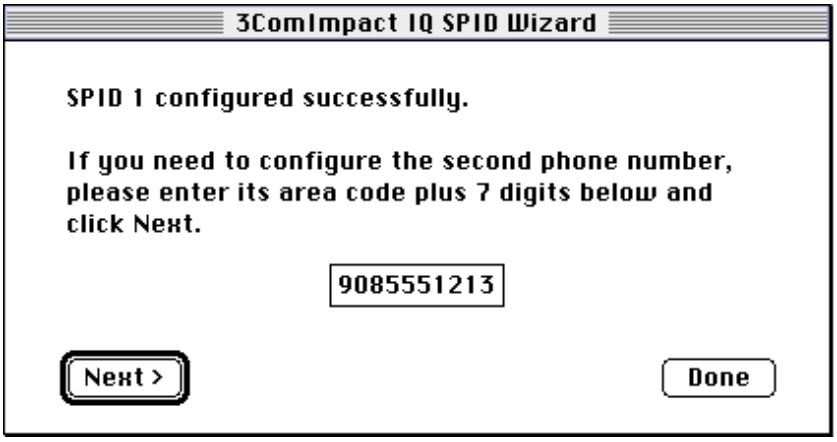

3ComImpact IQ SPID Wizard
SPID 1 configured successfully.
If you need to configure the second phone number, please enter its area code plus 7 digits below and click Next.
9085551213
Next >
Done

Figure 4-8 Second Telephone Screen for Macintosh

5 If you have a second telephone number for your ISDN line, enter it and click *Next*. If not, leave the field incomplete, and then click *Done*

If you entered a second telephone number for your ISDN line, the SPID for the second telephone number is configured.

A message box indicates that the configuration was successful.

6 Click *Done*.

The on-line registration dialog box appears. Click *Register* and enter your information. When complete, click *Register Now*.

Downloaded from www.Manualslib.com manuals search engine

After your information has been sent, the Configuration dialog box appears, as shown in Figure 4-9.

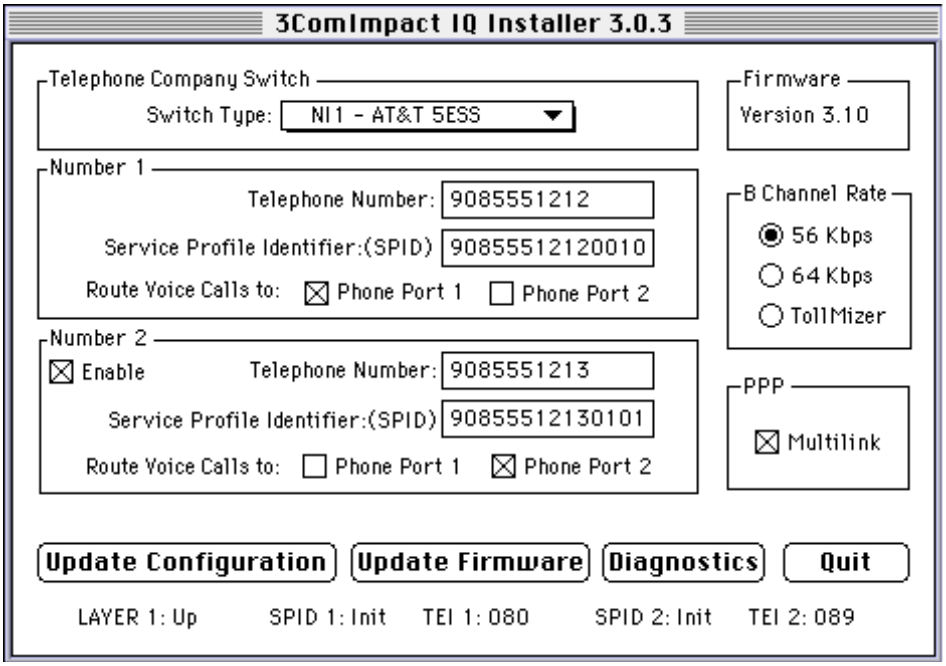


Figure 4-9 Configuration Dialog Box for Macintosh

The Configuration dialog box buttons do the following.

Update Configuration. Click *Update Configuration* to download parameter changes to your ISDN modem's S registers.

Update Firmware. Refer to the readme file for firmware download instructions.

Diagnostics. Use the *Diagnostics* tool only under the direction of technical support personnel.

Quit. Click *Quit* to leave the Configuration dialog box.

Configuring Multilink PPP

Multilink PPP is a protocol that provides a method for combining multiple PPP connections. Multilink PPP combines the two ISDN B channels, creating a virtual single digital connection of up to 128 Kbps. Note that the destination you

Downloaded from www.Manualslib.com manuals search engine

are dialing must also support Multilink PPP, or you will get a single B channel connection instead of the dual-channel link.

By default, Multilink PPP is enabled. To enable or disable Multilink PPP, do the following:

1 **Click the Multilink check box in the PPP area to clear it (disable) or check it (enable).**

2 **Click the *Update Configuration* button to download the change to your 3C882 ISDN modem's S register.**

Additional configuration may be needed for Multilink PPP. For details refer to S registers 82 and 83 in Appendix B.

Note that if you disable Multilink PPP (i.e., Register S80=0), you can still place a Multilink PPP call without changing the S 80 register value. In the dial string, enter the first telephone number, then the ampersand character followed by the second telephone number. For example:

```
ATD 908 555 1212 & 908 555 1213
```

Configuring the B Channel Rate

Specify the B channel rate as 56 Kbps, 64 Kbps, or select TollMizer if you would like to use that feature. TollMizer allows you to place a 56 Kbps data call using a voice channel, which is often less expensive. Note that the device you are calling must also support TollMizer (sometimes referred to as Switch 56 Permissive or Data Over Voice) to take advantage of this feature.

By default, the B channel rate is 56 Kbps. Check with your telephone company for the appropriate B channel rate.

To change the connection speed to 64 Kbps or TollMizer, do the following:

1 **Select the appropriate radio button (64 Kbps or TollMizer).**

2 **Click the *Update* button to download the change to your 3C882 ISDN modem's S register.**

Downloaded from www.Manualslib.com manuals search engine

Configuring Voice Call Routing

The 3C882 ISDN modem allows you to assign a specific telephone number to a specified analog phone port. By default, telephone number 1 is assigned to phone port one, and telephone number 2 is assigned to phone port two, as shown in Figure 4-10. This is especially helpful should you have both a telephone and a fax machine connected to your 3C882 ISDN modem's analog ports.

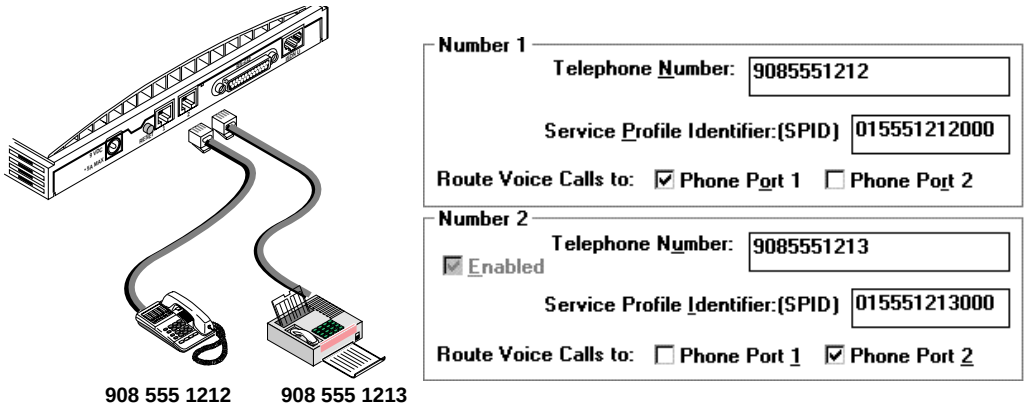

Number 1
Telephone Number: 9085551212
Service Profile Identifier:(SPID) 015551212000
Route Voice Calls to: Phone Port 1 Phone Port 2
Number 2
Telephone Number: 9085551213
Enabled
Service Profile Identifier:(SPID) 015551213000
Route Voice Calls to: Phone Port 1 Phone Port 2
908 555 1212
908 555 1213

Figure 4-10 Voice Call Routing Default Setting

Note the phone port check marks for each telephone number. This default configuration routes each telephone number to a specified port.

The ISDN Call Waiting default configuration is best served by the recommended scenario shown in Figure 4-13. By default, ISDN Call Waiting has been enabled on Phone Port 1, for use with your telephone, but disabled on Phone Port 2 to prevent potential interruption of calls to your fax machine (S76=1).

One Telephone Number and Two Analog Devices.

If you have only one telephone number for your ISDN line and two analog devices, check the Phone Port 1 and Phone Port 2 boxes located in the Number 1 group box, as shown in

Downloaded from www.Manualslib.com manuals search engine

Figure 4-11. Calls to that telephone number will ring both devices, allowing you to answer a call using either device.

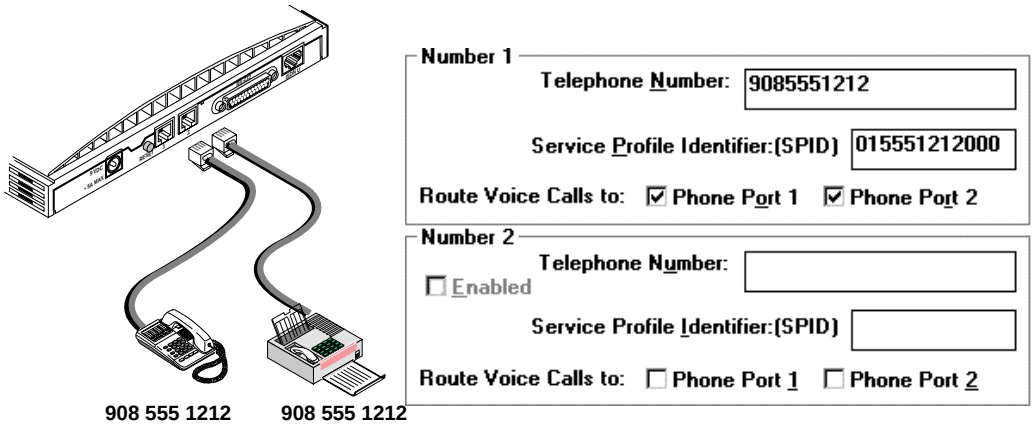
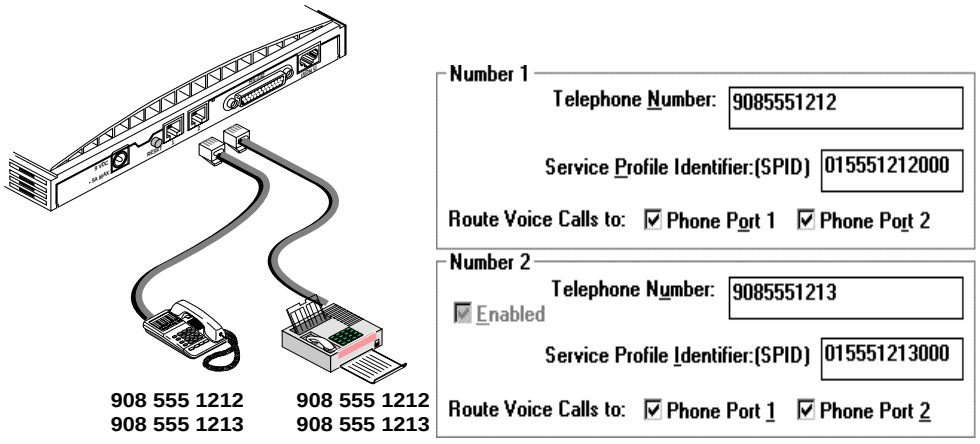


Figure 4-11 Configuration for One Telephone Number and Two Devices

Note that while you are using the fax machine, for example, you cannot use the telephone to place or receive calls because your ISDN line has only one telephone number.

Two Telephone Numbers and Two Analog Devices

If you have two telephone numbers and two analog devices attached to your 3C882 modem, you can choose to have both ISDN telephone numbers ring both devices simultaneously. For this scenario, you would place a checkmark in all four Phone Port boxes, as shown in Figure 4-12.



Downloaded from www.Manualslib.com manuals search engine

Figure 4-12 Configuration to ring both ports simultaneously

To change the voice call routing setting:

1. **Specify which Phone port should handle the calls associated with Telephone Number 1.**
2. **If your ISDN line has two telephone numbers, specify which Phone port should handle the calls associated with Telephone Number 2.**
3. **Click the *Update Configuration* button to download the change to your 3C882 ISDN modem's S register.**

Verifying the Configuration

Check the status bar located toward the bottom of the Configuration dialog box to verify correct configuration. If the parameters were configured accurately and the 3C882 ISDN modem is ready to send and receive calls, the status bar fields will appear as shown here.

The TEI number(s) are not configured by the user. The TEI number(s) are provided by the telephone company for informational purposes only.

- Layer 1: UP
- SPID 1: Init (if required)

Downloaded from www.Manualslib.com manuals search engine

- TEI 1: Number from 64 to 126
- SPID 2: Init (if required)
- TEI 2: Number from 64 to 126 (if required)

Before closing the Configuration dialog box, do the following.

1 **Confirm that the Configuration dialog box parameters are correct.**

2 **Click the *Update Configuration* button if you made any changes to the 3C882 ISDN modem configuration.**

3 **Click *Quit* to exit the Configuration dialog box.**

This completes the 3C882 ISDN modem configuration.

Refer to Chapter 5, "Advanced Configuration," to review the default settings and ensure that they reflect your preferences. If you prefer not to change the default settings, then go on to Chapter 7, "Placing and Receiving Calls."

Configuring Internet Access for a Macintosh Computer

There are two Internet Access Configuration scenarios covered:

- Open Transport (1.1 or higher) with OT/PPP
- Open Transport (1.1 or higher) with FreePPP

Set Up Using OT/PPP and Open Transport

This section describes setting up the 3C882 ISDN modem for use with Apple's Open Transport PPP (OT/PPP) in conjunction with Apple's Open Transport networking software (version 1.1 or higher). These instructions assume that the pertinent software has already been installed on your system.

Downloaded from www.Manualslib.com manuals search engine

1 Activate the PPP control panel by choosing the Apple menu, Control Panels and then PPP. The PPP control panel opens as shown in .

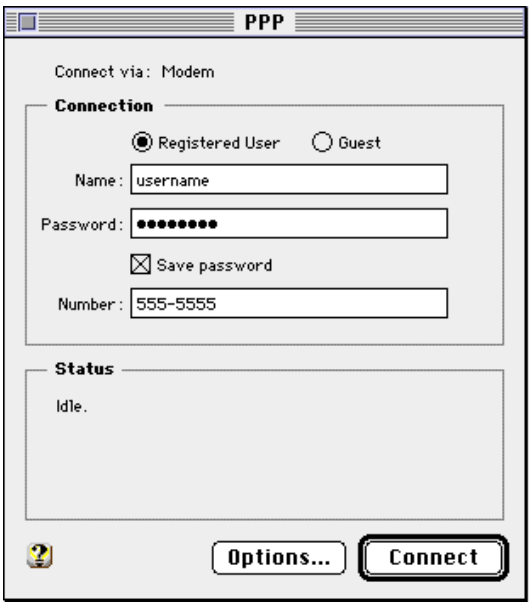


Figure 4-13 PPP Control Panel

2 Configure the PPP control panel as specified by your ISP.

3 Open the Modem control panel by choosing the PPP pull down menu and selecting *Modem*.

The Modem control panel opens as shown in Figure 4-14.

Downloaded from www.Manualslib.com manuals search engine

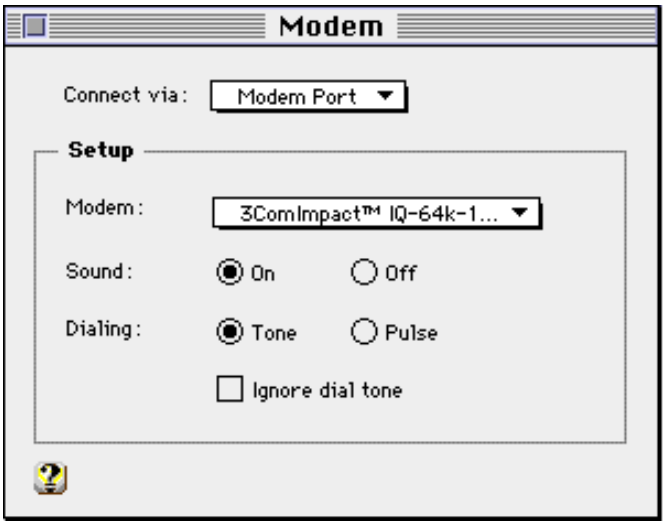


Figure 4-14 OT/PPP Modem Control Panel

4 Choose the port to which your modem is attached from the Connect via pop up menu. Then select the appropriate modem script file from the Modem menu that best matches your dial up criteria.

For example, if your ISP accepts connections at 64Kbps, and your computer's COM port can handle speeds up to 115K, then you would choose the 3ComImpact™ IQ-64k-115K modem script.

NOTE: Users of Apple's System 7.6 or later must move the 3ComImpact IQ Modem Script files into a separate folder in order to access them from the OT/PPP Modem control panel. These CCL scripts were placed in your Extensions folder (located in the System folder) during installation of the 3ComImpact IQ ISDN modem software. If you are using System 7.6 or later, drag these modem script files from the Extensions folder into the Modem Scripts folder (also located in the Extensions folder). Then select the appropriate script from the Modem menu.

5 Close the Modem control panel by choosing *File* and *Close*.

This returns you to the PPP control panel, as shown in .

Downloaded from www.Manualslib.com manuals search engine

6 Open the TCP/IP control panel by choosing *TCP/IP* from the PPP pull down menu.

The TCP/IP control panel opens as shown in Figure 4-15.

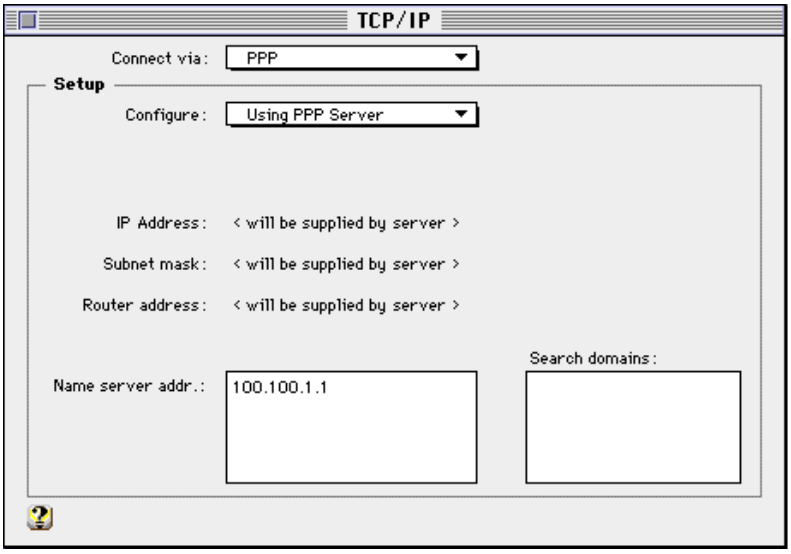


Figure 4-15 TCP/IP Control Panel

7 Choose *PPP* from the Connect via pop up menu, and *Using PPP Server* from the Configure menu (or *Manually* if specified by your ISP).

8 Enter the Name server address(es) as directed by your ISP, and the appropriate Search domain(s) if required. Then choose *File* and *Close*. When asked to save changes do so by choosing *Save*.

This returns you to the PPP control panel, shown in .

9 Close the PPP control panel by choosing *File* and *Close*. When asked to save changes, choose *Save*.

10 To make a connection, open the PPP control panel and choose *Connect*.

Once your call has been authenticated, you may open any web browser to access the Internet, such as Netscape or Microsoft's Internet Explorer.

Downloaded from www.Manualslib.com manuals search engine

Set Up Using FreePPP with Open Transport

FreePPP is a freeware application for accessing the Internet available for use with Apple's Open Transport networking software (version 1.1 or higher) or MacTCP, Apple's older networking software. These instructions cover Open Transport configuration only, and assume that the pertinent software has already been installed on your system.

These instructions are for FreePPP 2.5v2.

1 Open *FreePPP Setup* from the menu bar control panel located along the top of your Macintosh screen (you must have the FreePPP Setup control panel installed in your Control Panels folder to access and make changes to FreePPP.)

The FreePPP Setup screen opens as shown in Figure 4-16.

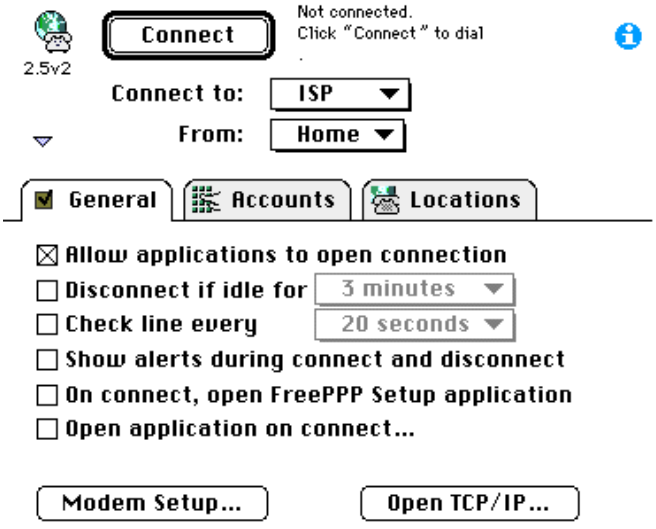


Figure 4-16 FreePPP Setup Screen

NOTE: If you do not see the General, Accounts or Locations tabs as shown in Figure 4-16, click the diamond on the left hand side of the FreePPP setup screen to the down position.

2 Click on the *Accounts* tab and select *New*.

Downloaded from www.Manualslib.com manuals search engine

The Account screen will open as shown in Figure 4-17.

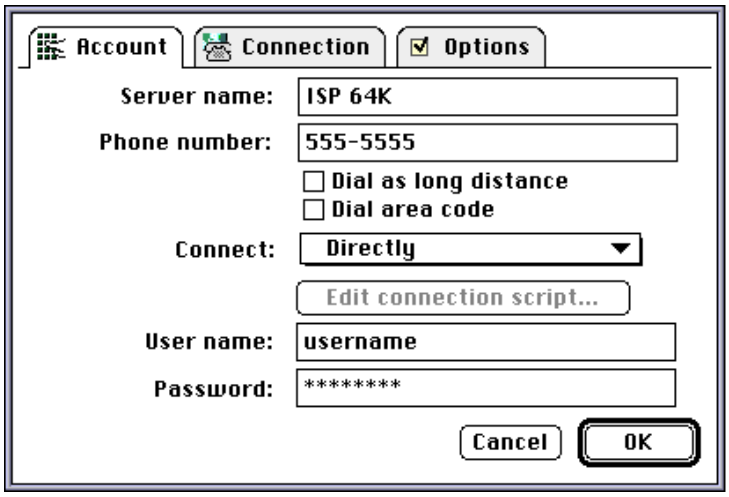


Figure 4-17 FreePPP Account Screen

3 Configure the fields as specified by your Internet service provider.

Generally you would enter the name of your ISP as the Server Name. However you may wish to specify a more unique description to distinguish this particular dial up profile. For example, you may want to set up two types of connections to the same ISP, one for single channel 64 Kbps calls and another for Multilink dual channel 128 Kbps calls. In this case, you should enter distinguishable names such as ISP 64K and ISP 128K.

4 Click the *Connection* tab at the top of the Account screen.

The Connection configuration screen will open as shown in.Figure 4-18

Downloaded from www.Manualslib.com manuals search engine

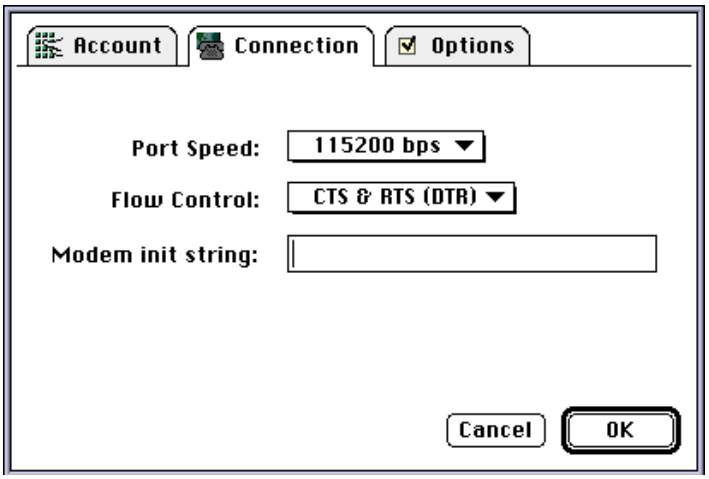


Figure 4-18 FreePPP Connection Screen

5 Choose the maximum COM port rate available for your computer, and then select *CTS & RTS (DTR)* from the pop up menu, as shown in Figure 4-18. Click *OK* to return to the FreePPP setup screen.

6 Click the *General* tab to return to the FreePPP Setup screen. Then click *Modem Setup* to reveal the FreePPP Modem Setup screen as shown in Figure 4-19.

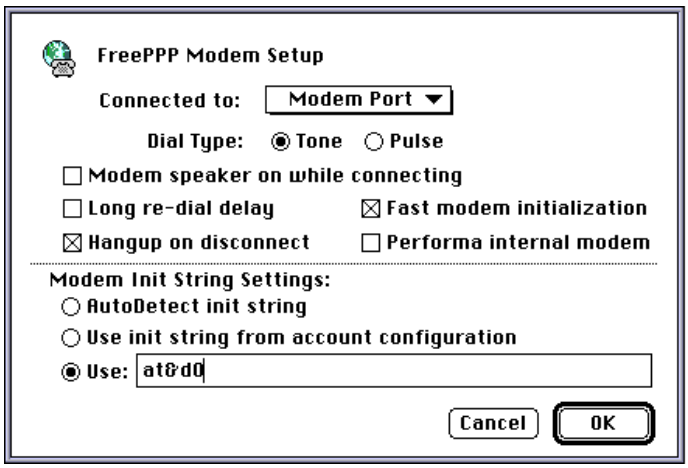


Figure 4-19 FreePPP Modem Setup Screen

Downloaded from www.Manualslib.com manuals search engine

7 Choose the port to which your 3ComImpact IQ ISDN modem is attached. Under Modem Init String Settings, click *Use*: and add `at&d0`. Click *OK* to return to the FreePPP Setup screen.

NOTE: You may want to set up unique modem configurations for each dial up Account profile (i.e., one Multilink PPP dial up account and one 64K Single link dial up). In this case, you would need to set specific modem init strings for each Account. To do this, check Use init string from account configuration *in the* Modem Init Strings Settings *of the* Modem Setup *screen shown in Figure 4-19. You would then specify a specific modem init string under the* Connection *tab of each Account configuration profile that you create.*

For example, to set up a specific account profile for Multilink PPP calls, you would add **`S80=1`** to the end of any existing init string you have; your complete init string would then read **`at&d0S80=1`**.

Multilink PPP calls may also be designated via the Configuration dialog box.

8 Click *Open TCP/IP* to access the TCP/IP control panel shown in Figure 4-20.

Downloaded from www.Manualslib.com manuals search engine

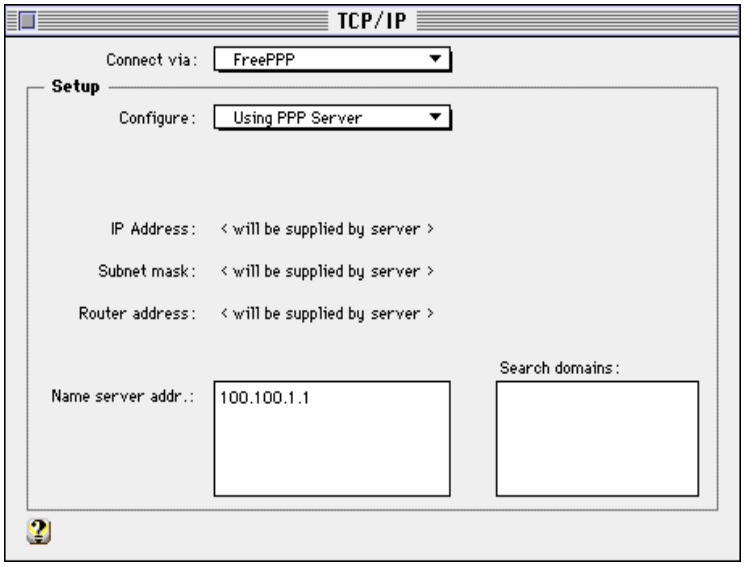


Figure 4-20 FreePPP TCP/IP Control Panel

9 Choose *FreePPP* from the Connect via pop up menu.

10 Choose *Using PPP Server* from the Configure menu (or *Manually* if specified by your ISP). Enter the Name Server Address(es) as directed by your ISP, and the appropriate Search Domain(s) if required. Then choose *File* and *Close*. When asked to save changes do so by choosing *Save*.

11 To make a connection, choose *Open PPP Connection* from the FreePPP menu bar control panel located at the top of your screen. Alternatively, choose *Open FreePPP Setup*, also located in the FreePPP menu bar control panel, click on the *Accounts* tab, highlight the particular dial up account that you wish to access, and click *Connect*.

Once your call has been authenticated, you may open any web browser to access the Internet, such as Netscape or Microsoft's Internet Explorer.

Downloaded from www.Manualslib.com manuals search engine

5 Advanced Configuration

This chapter presents information to guide you through advanced configuration options available for the 3C882 ISDN modem.

Advanced Configuration Parameter Default Values

To change advanced configuration parameter values, you will need terminal emulation software which will allow you to use AT commands.

The Windows 95 and Windows NT operating systems provide HyperTerminal terminal emulation software. For Macintosh users, terminal emulation software was provided in the 3ComImpact IQ folder during software installation.

The advanced configuration parameters and their default settings are as follows:

- QuickSelect (enabled)
- Dynamic Bandwidth Allocation (enabled)
- Auto Answer (disabled)
- Compression (enabled)
- Baud Rate (automatic detection of rates up to 115.2 Kbps)

Each parameter is described in detail in the following sections. If the default settings meet your preferences, go on to Chapter 7, "Placing and Receiving Calls."

For instructions on sending AT commands, refer to the section "Changing the Parameter Settings" on page 5-4.

Downloaded from www.Manualslib.com manuals search engine

QuickSelect

The QuickSelect feature (S71=0, by default) automatically detects and implements the protocol required for each digital call, either V.120 or Async-Sync PPP. Typically, V.120 is used for communication between two computers, whereas PPP is used for communication between a computer and an Internet service provider.

Dynamic Bandwidth Allocation

DBA (S70=3, by default) is a method of automatically reallocating bandwidth to allow you to place or receive a voice call while a Multilink PPP call is active (i.e., both B channels are in use).

In this situation, when you lift the handset to place an outgoing call or to answer an incoming call, one of the B channels is temporarily removed from the Multilink PPP call and is used for the voice call.

Once the voice call ends, that B channel is automatically returned to the Multilink PPP call. Although throughput is reduced to one channel while the voice call is active, the integrity of the Multilink PPP call is maintained.

If you are on the receiving end of a Multilink PPP call (i.e., someone has dialed into your 3C882 ISDN modem) and you place a voice call, one of the B channels will still be allocated for the new voice call. However, once the voice call ends, that B channel cannot be returned to the incoming Multilink PPP call. The B channel can only be returned to the Multilink PPP call for outgoing Multilink PPP calls.

Outgoing DBA takes precedence over incoming DBA. For example, during a Multilink PPP call, you receive an incoming voice call over Phone port 1. You may, however, prefer to place an outgoing call over Phone port 2 and ignore the incoming call. When you place your call over Phone port 2,

Downloaded from www.Manualslib.com manuals search engine

the incoming call is dropped. The calling party will still hear ringing, and must retry their call.

If you have a Multilink PPP call active and you receive an incoming voice call, one of the two B channels will not be assigned to the voice call until you answer the voice call. The LED remains green until the call is answered.

Auto Answer

When Auto Answer is disabled (S0=0, by default), a RING message is delivered to the RS-232 serial port upon reception of an incoming data call to the 3C882 ISDN modem. Enter the command **AT A** to answer the incoming data call. A `CONNECT` message is then delivered to the RS-232 port upon successful connection.

If Auto Answer is enabled (S0=(1-255)), the data call is automatically answered after the number of rings specified via the S register, and a `CONNECT` message, along with the speed of the connection, is delivered to the RS-232 port.

Compression

Compression is a method of reducing the size of transferred data without losing any information. The 3C882 ISDN modem automatically compresses data to improve data transfer times using the hi/fn LZS version 5 compression method.

Compression is enabled (%C2, by default) and will automatically be invoked unless you are running compression on your computer. If you are running compression on your computer, that compression method will be used instead of 3C882 compression even if 3C882 compression is enabled. AT%C0 will disable compression.

Baud Rate

By default, the baud rate is set to Autobaud ($B0). Autobaud automatically detects the maximum data rate of your computer's COM port. Rates up to 115.2 Kbps can be detected automatically. 3Com recommends that you leave

Downloaded from www.Manualslib.com manuals search engine

Autobaud enabled unless you want to set the baud rate to 230.4 Kbps. The command AT $B (baud rate) is used to set a specific baud rate, such as 230.4 Kbps. Refer to Appendix B for a list of acceptable values.

To access the 3C882 Configuration dialog box, Autobaud must be enabled. If the baud rate is set to a specific rate, you will not be able to access the Configuration dialog box. Refer to Chapter 8, "Restoring the 3C882 ISDN Modem to Autobaud." for assistance.

Changing the Parameter Settings

To change parameter settings:

1 **Launch your communications or terminal emulation software.**

2 **Be sure the 3C882 ISDN modem is in command mode (sometimes called local mode or terminal mode) so that it interprets your commands.**

When powered on, the 3C882 ISDN modem automatically starts in command mode. If you have recently used the 3C882 ISDN modem to make a call and have not yet disconnected, type +++ to switch to command mode.

3 **Type:**

AT <command>

4 **Press [Enter] or [Return].**

Refer to Table 5-1 for the appropriate command. For example, to disable compression, you would type

AT%C0

and then press [Enter] or [Return].

An AT command line starts with the characters **AT**. The command line accepts up to 40 command characters in the line (not including the two AT characters, or spaces).

AT commands may be used to set (or change) a value, as well as to read the status of an existing value by including a

Downloaded from www.Manualslib.com manuals search engine

question mark (**?**) after the particular value. For example, to read the status of S register 63, you would type

AT S63?

and then press [Enter] or [Return].

After completing its tasks, the 3C882 ISDN modem sends a message to the screen followed by a result code. Refer to Appendix B for a complete list of result codes.

5 To change another parameter setting, repeat steps 1 through 4. Otherwise, go on to Chapter 7, "Placing and Receiving Calls."

Table 5-1 Changing Default Settings

Parameter	Default Value	To Change the Default
QuickSelect	Enabled (S71=0)	Send the command ATS71=1 to use Async-Sync PPP exclusively or ATS71=2 to use V.120 exclusively.
DBA	Enabled for both incoming and outgoing calls (S70=3)	Send the command ATS70=0 to disable DBA.
Auto Answer	Disabled (S0=0)	Send the command ATS0=(number of rings before the ISDN modem answers the call) to enable Auto Answer.
Compression	Enabled (%C2)	Send the command AT%C0 to disable compression.
Autobaud	Enabled ($B0)	Send the command AT$B (rate) to set a specific baud rate. Acceptable values are 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, and 230400.*
		Send the command AT$B0 to return to Autobaud.
		Autobaud does not exceed 115200. For 230400 you must send the command AT $B230400 to the ISDN modem.

* To access the Configuration dialog box, the baud rate must be set to Autobaud.

Downloaded from www.Manualslib.com manuals search engine

Downloaded from www.Manualslib.com manuals search engine

6 Supplementary Voice Features

Supplementary Voice Features

This chapter provides an overview of the supplementary voice features which are available for the 3C882 ISDN Modem. These voice features are as follows:

- Call Forwarding
- ISDN Call Waiting
- Call Conference (3 Way Calling)
- Call Transfer

To use Call Conference, as well as Call Transfer, your ISDN line must support Flexible Calling. To use ISDN Call Waiting, your ISDN line must support Additional Call Offering (ACO). Check with your telephone company to determine whether or not these services are supported. Note that there may be an extra charge to support these features. Refer to Chapter A, "Ordering ISDN Service" for additional information.

In some cases your telephone company may enable supplementary voice features service on your first telephone number only. You may need to specifically request that these services be enabled on your second telephone number as well.

Call Forwarding

The ISDN modem passively supports Call Forwarding. If you subscribe to this service, which you must order separately from your telephone company, you can enter the appropriate command from the analog telephone attached to your ISDN modem and it will be passed through. Your

Downloaded from www.Manualslib.com manuals search engine

telephone company should provide the appropriate commands.

The 3C882 ISDN modem will announce a forwarded call by producing a short ring on the telephone that is routed to the forwarded number.

ISDN Call Waiting

ISDN Call Waiting allows you to place a voice call on hold while you answer an incoming voice call.

By default, ISDN Call Waiting is disabled on analog port 2 (S76=1). To avoid potential call interruptions when sending or receiving a fax transmission, you should therefore install your fax machine on analog port 2.

Table 6-1 How to Use Call Waiting

How Do I	Do This
Place the first call on hold and answer the second?	When you hear the call waiting indicator, press and immediately release the switch hook button.
Place the second call on hold and then switch back to the first call?	Press and release the flash hook. The second call is then put on hold.
End the first call and then answer the second call?	Hang up the telephone, wait for the telephone to ring, and then answer the call.
What if the call on hold is dropped?	If the call on hold hangs up at the far end, you will receive no notice. If you press and release the switch hook button, you will get a dial tone, indicating that the call on hold was dropped. Press and release the switch hook button again to return to the previously active caller.
What if the active caller hangs up?	If the active caller hangs up, the call on hold remains on hold until you retrieve it by pressing and immediately releasing the switch hook button. If you hang up while a call is on hold, the telephone will ring to indicate that there is a call on hold. If you do not retrieve the call within 6 seconds, the call is dropped.

Downloaded from www.Manualslib.com manuals search engine

*The analog method for disabling Call Waiting, typically *70, is not available for ISDN. Instead, you must set the appropriate S Register (S76) to activate or deactivate the Call Waiting feature. Refer to Appendix B, "AT Commands, S Registers, and Result Codes" for the appropriate values.*

Troubleshooting

What if the call is busy? The 3C882 ISDN modem supports two simultaneous voice calls per voice port. If you already have two calls up (e.g., one active and one on hold), any incoming calls will be rejected (i.e., the caller hears a busy signal). An incoming call will also be rejected during an outgoing call that is not yet active, or while your telephone is ringing for an incoming call.

If you should hear the Call Waiting indicator when attempting to dial a third party, the Call Waiting takes precedence.

Call Conference

Call Conference (also referred to as Three-Way Calling or TWC) is a voice call feature that allows you to add another party to an existing call. This feature can be used whether you have received or have placed the first call.

You cannot conference two incoming calls. You must initiate the third call in order to activate Call Conferencing.

Table 6-2 How to Use Call Conference

How Do I	Do This
Place a new conference call?	While the first call is active, press and release the switch hook button. The B channel LED light flashes to indicate that the first call is on hold, and you will hear a dial tone. Then dial a third party number. After the third party has answered, press and release the switch hook button to connect all three parties.
Drop the last party added to the conference call?	To drop the last party added to the conference call, press and release the switch hook button.

Downloaded from www.Manualslib.com manuals search engine

Table 6-2 How to Use Call Conference

How Do I	Do This
Abort the second dial and switch back to the first call?	If the dialed party is busy, press and release the switch hook button to cancel the call and reconnect you to the first call. If you dialed a wrong number, or the far end does not answer, hang up the phone to abort the attempted call. The phone will then ring, indicating that the first call is on hold. Answer the phone to reconnect you to the first call.
What if I hear a dial tone when I attempt to conference all three parties?	A dial tone indicates that one of the parties has dropped their call. Press and release the switch hook button to return to the previously active call. You can then conference a third party as described previously.
What if the telephone rings after I hang up?	While you try to conference a call, the active call will be put on hold to allow you to dial a new call. If you hang up the phone before the call is connected, the telephone will ring to let you know that you still have a call on hold. The call on hold will be disconnected in 6 seconds if the call is not answered.

Call Drop

Call Drop allows you to remove the last caller to a conference. After a conference call has been established, simply press and release the flash hook button to drop the last caller added. See S register 79 in Appendix B for more Call Drop information.

Call Transfer

Call Transfer is a voice call feature that allows you to transfer a call to a third party. This feature can be used whether you have received or have placed the first call.

Table 6-3 How to Use Call Transfer

How Do I	Do This
Place a new call?	While the first call is active, press and release the switch hook button, wait for the dial tone, and then dial a third party number. After the third party has answered, press and release the switch hook button to conference all three parties, and then hang up the telephone to transfer the call.

Downloaded from www.Manualslib.com manuals search engine

Table 6-3 How to Use Call Transfer

How Do I	Do This
Cancel the second call and switch back to the first call?	If the dialed party is busy, press and release the switch hook button to cancel the attempted call and reconnect you to the first call. If you should hang up, the phone will ring back, indicating that you have a call on hold. If you dialed a wrong number, or the far end does not answer, hang up the phone to abort the attempted call. The phone will then ring, indicating that the first call is on hold. Answer the phone to reconnect you to the first call.

If you experience difficulty implementing any of the Supplementary Voice Features, confirm that you have these features enabled on your ISDN line, and that the default Call Conferencing, Call Transfer, and Call Drop S register values (S77, S78, and S79) match the values required by your telephone company.

ISDN Service from Pacific Bell

If your ISDN line has been provisioned through Pacific Bell, and you are having difficulty implementing Call Hold, Call Drop, Call Conference and Call Transfer, you may need to make three additional S register changes to take advantage of these Flexible Calling features.

1 **Contact Pacific Bell and discern the appropriate Call Hold, Call Drop, Call Conference and Call Transfer key values.**

2 **Launch your terminal emulation software.**

You will need to change the values of S registers 77, 78, and 79.

3 **Send the following command to the 3C882 ISDN modem:**

AT S77=x S78=x 79=x

(where **x** is the key value supplied by Pacific Bell) and press [Enter] or [Return].

Downloaded from www.Manualslib.com manuals search engine

This completes the procedure for Pacific Bell ISDN users.

Refer to Chapter 5,"Changing the Parameter Settings" or Appendix B, "AT Commands, S Registers, and Result Codes" for further assistance.

Downloaded from www.Manualslib.com manuals search engine

7 Placing and Receiving Calls

This chapter illustrates how to place and receive a variety of calls with your 3C882 ISDN modem. The 3C882 ISDN modem uses AT commands and S registers for call management.

This chapter covers the following:

- Placing ISDN data calls
- Placing a Multilink PPP call
- Placing a TollMizer call
- Receiving ISDN data calls
- Placing calls using an analog phone port
- Receiving calls using an analog phone port
- ISDN Call Logging

Placing ISDN Data Calls

You can let your communications software send and receive calls for you, or you can use a terminal emulator to place calls manually. Software that communicates using AT commands (such as HyperTerminal) is required to control the 3C882 ISDN modem. You can choose to enter these codes manually; however they are often entered automatically by modem communications software.

When you place a call, the B channel LED(s) flash green and then remain lit once the call is established. (If you are running Multilink PPP, one B channel flashes and then remains lit. Then the second B channel flashes and it too remains lit.)

For Macintosh users, add **&D0** *to the modem initialization string of your communications software.*

Downloaded from www.Manualslib.com manuals search engine

Placing Calls Automatically

If you are using standard communications software, select the 3ComImpact IQ ISDN modem. If the 3ComImpact IQ ISDN modem is not listed, select a Hayes®-compatible modem configuration and dial out through the 3C882 ISDN modem. If you are using a Hayes-compatible modem configuration, you may have to manually configure settings such as baud rate. Refer to your communications software documentation for more details.

Placing Calls Manually

You can place calls manually using AT commands. Your communications software must be in terminal emulation mode.

Follow these steps to use AT commands:

In most situations, an initialization string is not necessary with the 3C882 ISDN modem. If an initialization string is required by the communications software or server, use the Hayes default initialization string.

1 **Launch your communications software.**

2 **Be sure the 3C882 ISDN modem is in command mode (sometimes called local mode or terminal mode) so that it interprets your commands.**

When your computer is powered on, the 3C882 ISDN modem automatically starts in command mode. If you have recently used the 3C882 ISDN modem to make a call and have not yet disconnected, type +++ to switch to command mode.

3 **Type:**

```
AT D <telephone number>
```

The 3C882 ISDN modem recognizes the AT command **ATD** to dial a digital ISDN data call. Correct examples of outgoing

Downloaded from www.Manualslib.com manuals search engine

circuit-switched ISDN modem commands with dial strings are:

AT D 1 408 654 2703

ATD14086542703

For a summary of the AT command set, see Appendix B.

4 Press [Enter] or [Return].

After completing its tasks, the 3C882 ISDN modem sends a message to the screen.

An AT command line starts with the characters AT. The command line can accept up to 40 command characters in the line (not including the two AT characters, or spaces) Refer to Chapter 5, "Changing the Parameter Settings" for assistance on AT commands.

Placing Multilink PPP Calls

Before you place a call, ensure that the Multilink PPP box on the 3C882 ISDN modem Configuration dialog box is checked. The destination you are calling must also support Multilink PPP. For example, if you are trying to dial into the Internet, your Internet service provider must support Multilink PPP in order to successfully place a Multilink PPP call.

Although this is not generally the case, your Internet service provider may require an Endpoint Discriminator Class and an Endpoint Discriminator. The Endpoint Discriminator Class is configured using S register 82. The Endpoint Discriminator value is configured using S register 83. Refer to Appendix B for acceptable values.

For automatic placement of a Multilink PPP call, once you have checked the appropriate box in the Configuration dialog box, simply launch the call.

For manual dialing, use terminal emulation software and type the following:

Downloaded from www.Manualslib.com manuals search engine

ATD <telephone number>

An example is as follows:

ATD 1 908 555 1212

Some Internet service providers may require you to dial two telephone numbers to place a Multilink PPP call. In this case, the ampersand (&) character is used to dial two telephone numbers.

To automatically dial two telephone numbers, add the following to the dial string of your application software:

<telephone number 1> & <telephone number 2>

In this case, you would type, for example:

ATD 1 908 555 1212 & 1 908 555 1213

Note that if Multilink PPP is disabled (i.e., S 80=0), you can still place a Multilink PPP call without changing the S 80 register value. In the dial string, enter the first telephone number, then the ampersand character followed by the second telephone number, as shown in the example above.

Placing a TollMizer Call

The TollMizer feature (also referred to as Switch 56 Permissive or Data Over Voice) allows you to place a data call using a voice channel, saving the extra cost of the data channel. Combining TollMizer with 3ComImpact IQ compression, you can transfer up to 128 Kbps of data for the price of a single voice call.

TollMizer calls may not work properly if placed via long distance carriers.

You can select this feature from the 3C882 ISDN modem's Configuration dialog box. Once enabled, all outgoing ISDN calls will be TollMizer calls. Note that to place calls to devices which do not support TollMizer, you must disable this feature

Downloaded from www.Manualslib.com manuals search engine

either via the Configuration dialog box or setting S register 61=0.

By setting S register 61=1, all outgoing calls will be TollMizer calls.

Alternatively, you can place TollMizer calls on a call by call basis using the command ATDD <telephone number>. To manually dial a TollMizer call on a call-by-call basis, type the following:

```
ATDD <telephone number>
```

An example is as follows:

ATDD 1 908 555 1212

Note that the TollMizer feature is available for Multilink PPP calls as well.

Before using the TollMizer feature, check with your Internet service provider to verify that they support it and that it is enabled.

The device you are dialing into must be capable of generating the 2.1 kHz tone needed to disable the echo cancellers on the line. Refer to the Readme file located on the software diskette for more information.

Receiving ISDN Data Calls

The 3C882 ISDN modem can receive incoming circuit-switched data calls from other 3C882 ISDN modems or from ISDN devices.

When Auto Answer is disabled (S0=0, by default), a RING message is delivered to the RS-232 port upon reception of an incoming data call to the 3C882 ISDN modem. Enter the command AT A to answer the incoming data call. A CONNECT message is then delivered to the RS-232 port upon successful connection.

Downloaded from www.Manualslib.com manuals search engine

If Auto Answer is enabled, the call is automatically answered and a CONNECT message, indicating the speed of the connection, is delivered to the RS-232 port.

When the 3C882 ISDN modem receives a voice call, the B channel LED(s) flash green and then remain lit once the call is answered. (If you are running Multilink PPP, both B channels flash and then remain lit.)

A flashing LED(s) indicate that the receiving end has not yet answered the call.

Placing Voice Calls Using an Analog Phone Port

To place an outgoing call, simply take the telephone handset or external fax machine off the hook, wait for a dial tone, and dial the destination telephone number.

When you place a voice call, a B channel LED flashes amber, and then remains lit once the call is established.

A flashing LED(s) indicate that the receiving end has not yet answered the call.

Receiving Voice Calls Using an Analog Phone Port

By default, incoming calls to ISDN telephone number 1 will ring devices connected to phone port one, while calls to ISDN telephone number 2 will ring devices connected to phone port two.

When the 3C882 ISDN modem receives a voice call, a B channel LED flashes amber, and then remains lit once the call is answered.

During a Multilink PPP session, the B channel LED will remain green until the call is answered.

Downloaded from www.Manualslib.com manuals search engine

Troubleshooting

If both ports are busy, and Call Waiting has been disabled (i.e., S76), the third incoming call generates a busy signal to the far end.

If Call Waiting is enabled, and your telephone company has provisioned this feature on your ISDN line, you will hear the Call Waiting indicator (a click), alerting you to an incoming call. Refer to Chapter 6, "Supplementary Voice Features" for further ISDN Call Waiting assistance.

ISDN Call Logging

ISDN Call Logging displays the five latest incoming and outgoing numbers over the data and analog ports. To use this feature, your ISDN line must support Caller ID.

Conventional, or Analog Caller ID, which requires an additional external device to monitor incoming calls, is not supported by the 3C882 ISDN modem. However, you must have Caller ID enabled on your ISDN line to utilize the Call Logging feature.

To view the call log, use terminal emulation software to enter the command AT\N and then press Enter. If there had been any incoming or outgoing calls over the data (RS-232) port or analog ports, the telephone number of the caller (for incoming calls) or called party (for outgoing calls) is displayed followed by a time indicator. This time indicator shows the elapsed time between the specific incoming or outgoing call and the time you accessed the log to view the call information.

For example, if you enter AT\N and see an incoming call with a time of 7:30 logged, this indicates that call was received seven minutes and thirty seconds ago.

Downloaded from www.Manualslib.com manuals search engine

This information is cleared upon restarting or power cycling the unit. To clear the Call Logging information manually, use terminal emulation software to enter the command AT\N0.

Troubleshooting

What if no information is displayed? If you enter AT\N but the Call Logging information is not displayed, you may not have Caller ID provisioned on your ISDN line. If you would like to use the Call Logging feature, contact your telephone company and have them enable Caller ID. Note that there may be an additional charge to add this service.

Downloaded from www.Manualslib.com manuals search engine

8 TROUBLESHOOTING

This chapter explains how to isolate and solve problems encountered with the 3C882 ISDN modem. Problems may stem from incorrect option settings or improper installation.

Your ISDN line provisioning may also affect your 3C882 ISDN modem's performance. Refer to Chapter A, "Ordering ISDN Service" for assistance.

This chapter covers the following main topics:

- Checking the basics
- Monitoring the LEDs
- Evaluating symptoms and solutions
- Identifying error codes
- Using on-line help
- Finding more information
- Contacting technical support
- Downloading firmware
- Microkey driver error codes
- Restoring the modem to Autobaud

There are no user-serviceable parts inside your 3C882 ISDN modem. Unauthorized opening of the unit will void the warranty.

Downloaded from www.Manualslib.com manuals search engine

Checking the Basics

Before you monitor the LEDs or refer to the section on symptoms and solutions, check the following:

- Verify that the cables are not physically damaged. If damage is apparent, replace the cable.
- Verify that the power cord is connected to an electrical outlet and the 3C882 ISDN modem.
- Verify that the ISDN cable is properly connected to the 3C882 ISDN modem and the ISDN wall jack.
- Verify that the 3C882 ISDN modem is connected to the proper COM port. Note that the DTR LED will indicate successful communication between your communications application and the 3C882 ISDN modem.

The 3C882 ISDN modem will not operate if connected to an analog telephone wall jack. Make sure that the 3C882 ISDN modem is connected directly into the ISDN wall outlet without connection to any intermediate telephone equipment (an NT1 device is not required with the 3C882 ISDN modem).

Monitoring LEDs

If you are experiencing operational inconsistencies, monitor the following LEDs to isolate problems.

Monitoring the TEST LED

Press the *Reset* button and observe the TEST LED. During power-up self-test, the TEST LED flashes.

- If the LED goes out after the test has been completed, the test has been successful.
- If the TEST LED flashes and remains on for more than a few minutes, there is an internal failure. Notify your reseller that the 3C882 ISDN modem has failed the self-test, and order a replacement.

Downloaded from www.Manualslib.com manuals search engine

Monitoring the D Channel LED

Observe the D channel LED. If you are connected to a live digital ISDN line, the D channel LED remains lit for a few minutes after the self-test and then begins to flash. When the D channel LED flashes, it indicates that the ISDN signal is present and it is attempting to synchronize with the telephone company.

When the D channel LED goes out, it indicates that a valid communication channel has been established and you can place calls. If the D channel LED does not go out, refer to the "Evaluating Symptoms and Solutions" section.

Monitoring the B Channel LEDs

Attempt to place a call and observe the B channel LED(s). The B1 and B2 LEDs flash amber for a voice call or green for a data call during the call establishment phase. They then remain continuously amber or green once the connection is established. If they do not remain continuously amber or green, refer to the "Evaluating Symptoms and Solutions" section below.

Monitoring the SD LED

When flashing, the Send Data LED indicates that information is being transmitted over the serial data port from the computer to the 3C882 ISDN Modem.

If this LED flashes and yet you are not able to communicate with the ISDN modem, you may be attempting to communicate at incompatible baud rates. Refer to "Restoring the 3C882 ISDN Modem to Autobaud" below.

Monitoring the RD LED

When flashing, the Receive Data LED indicates that information is being transmitted over the serial data port to the computer from the 3C882 ISDN modem.

If this LED flashes and yet you are not able to communicate with the 3C882 ISDN modem, you may be attempting to

Downloaded from www.Manualslib.com manuals search engine

communicate at incompatible baud rates. Refer to "Evaluating Symptoms and Solutions" below.

Monitoring the DTR LED

When illuminated, the Data Terminal Ready LED indicates that communication between the 3C882 ISDN modem and your computer has been established.

If the DTR LED does not illuminate, refer to "Evaluating Symptoms and Solutions" below.

Evaluating Symptoms and Solutions

Table 8-1 lists symptoms of common problems, possible causes, and possible solutions.

Table 8-1 Symptoms, Causes, and Solutions

Symptom	Possible Cause	Solution
TEST LED remains lit for more than a few minutes	An internal failure.	Notify 3Com Technical Support that the 3C882 ISDN modem has failed the self-test.
D channel remains lit for more than a few minutes	Poor physical connection to the local telephone company.	If the telephone wires at your site appear to be satisfactory, call your local telephone company for repair of telephone company equipment and troubleshooting assistance.
D channel continues to flash for more than a few minutes	A mismatch between the settings of the ISDN line and the 3C882 ISDN modem configuration.	Verify the telephone number and SPID (if required). If the D channel LED continues to flash, open the 3C882 ISDN modem's Configuration dialog box. If your telephone number has changed, the SPID Wizard may be able to reconfigure your SPID values. Or call your telephone company to verify the SPID and telephone number and ensure that the telephone company has configured the ISDN line properly (refer to Appendix A, "Ordering ISDN Service.").

(Continued)

Downloaded from www.Manualslib.com manuals search engine

Table 8-1 Symptoms, Causes, and Solutions

Symptom	Possible Cause	Solution
Calls cannot be placed from analog equipment	If you cannot place a call, there may be a problem with the configuration of your ISDN line.	Call the telephone company to verify that your line is configured for circuit-switched voice and data service.
	Calls from an analog port may be blocked.	From the Configuration dialog box, check the Phone Port 1 and Phone Port 2 boxes, which are used for voice call routing. Ensure that the correct Phone Port box for each port is checked.
		Attach a different telephone to the analog port to verify if the problem is with the analog device.
SPID 2 takes several minutes to initialize	The switch type has been manually changed to "unknown" (S50=0) but the SPID fields have not been cleared.	If you change the switch to "unknown", clear the values in the SPID fields by deleting the values listed in S52 and S53. Use terminal emulation software to enter the commands **ATS52=** and **ATS54=**
B channel LED(s) do not remain green or amber	Problem with your computer or application software or incompatible local or toll telephone company.	Carefully monitor the B1 and B2 LEDs while attempting a call. These LEDs flash during call establishment and then remain green or amber once the connection is established.
		If neither LED flashes, ensure that your computer is turned on and operational, and that your application software has sent an AT dial command in the proper format.
		There may be an incompatible local or toll telephone company. Contact your local telephone company and have it verify that you can dial a data call to the destination telephone number.
		Send the command **AT\S** and check the cause code field.

(Continued)

Downloaded from www.Manualslib.com manuals search engine

Table 8-1 Symptoms, Causes, and Solutions

Symptom	Possible Cause	Solution
A connection has been established (B-1 or B-2 green LED remains lit and you receive a CONNECT message) but data cannot be sent	There is an interoperability mismatch between the local and remote applications.	Make sure that the local and remote data applications have communications capability and are properly configured. Ensure that the baud rates for each application are set to an equal value.
Upon power up, both the TEST and D channel LEDs flash	A previous firmware download did not complete successfully.	Download the firmware. Refer to the readme file for firmware download instructions.
Both B1 and B2 LEDs flash when the D channel lights	The 3C882 ISDN modem baud rate is set to 230.4 Kbps. or to a fixed rate (i.e., Autobaud is disabled).	Ensure that your computer's COM port supports 230.4 Kbps or change the COM port setting of either your computer or the ISDN modem so that both devices are set to the same COM port rate.
Cannot place or receive two simultaneous calls	Your ISDN line has not been provisioned for simultaneous voice and data.	Check your ISDN line provisioning. Ensure that simultaneous voice and data has been provisioned for both directory numbers.
DTR LED does not remain lit after you have started your communication application	Communication between the ISDN modem and your PC has not been successfully established.	Verify that the 3C882 ISDN modem is powered on. Verify that the COM port cable is firmly connected to the COM port on your PC and the COM port on the 3C882 ISDN modem. Verify that the correct COM port (the one to which the 3C882 ISDN modem is connected) is selected in your communications application.

(Continued)

Downloaded from www.Manualslib.com manuals search engine

Table 8-1 Symptoms, Causes, and Solutions

Symptom	Possible Cause	Solution
ISDN Call Waiting does not work.	ISDN Call Waiting is disabled.	ISDN Call waiting is disabled on Port 2 by default (S76=1). Use terminal emulation software to change S76 to the appropriate value. Refer to Chapter B, "AT Commands, S Registers, and Result Codes" for the available options.
	Your ISDN line is not provisioned for ISDN Call Waiting	To use ISDN Call Waiting, you must have ACO (Additional Call Offering) provisioned on your line. Contact your telephone company for further assistance. Note that ACO is not available on a 5ESS Custom switch.
Cannot place a call when a Multilink PPP call is active (DBA).	DBA is not enabled.	Make sure DBA is enabled by setting S70. Refer to Chapter B, "AT Commands, S Registers, and Result Codes" for the available options.
Cannot receive an incoming voice call during a Multilink PPP session.	DBA is not provisioned on your ISDN line	To use incoming DBA, you must have ACO (Additional Call Offering) provisioned on your line. Contact your telephone company for further assistance. Note that ACO is not available on a 5ESS Custom switch

Downloaded from www.Manualslib.com manuals search engine

Microkey Error Codes

Table 8-2 lists Microkey error codes, possible causes, and possible solutions regarding installation of the Microkey Com Port Accelerator card for Windows 3.x.

Table 8-2 Microkey Error Codes and Their Meaning

Error Code	Possible Cause	Solution
1001	Cannot find or copy the file s7comm.drv.	Check the 3COM directory and reinstall the 3C882 ISDN modem software.
1002	Cannot find or copy the file s7vcd.drv.	Check the 3COM directory and reinstall the 3C882 ISDN modem software.
1003	Cannot find or copy the file s7combuf.drv.	Check the 3COM directory and reinstall the 3C882 ISDN modem software.
1004	Cannot create a backup SYSTEM.INI file.	Reinstall the 3C882 ISDN modem software.
1005	Cannot remove *vcd from the SYSTEM.INI file.	An unknown third-party device driver may exist on the computer. Please contact 3Com Technical Support for further assistance.
1006	Cannot remove *combuf from the SYSTEM.INI file.	An unknown third-party device driver may exist on the computer. Please contact 3Com Technical Support for further assistance.
1007	Cannot remove comm.drv from the SYSTEM.INI file.	An unknown third-party device driver may exist on the computer. Please contact 3Com Technical Support for further assistance.
1008	Cannot configure the SYSTEM.INI file for s7comm.drv.	Reinstall the 3C882 ISDN modem software. and/or contact 3Com Technical Support.
1009	Cannot configure the SYSTEM.INI file for s7vcd.drv.	Reinstall the 3C882 ISDN modem software. and/or contact 3Com Technical Support.
1010	Cannot configure the SYSTEM.INI file for s7comm.buf.drv.	Reinstall the 3C882 ISDN modem software. and/or contact 3Com Technical Support.
1021	Cannot remove TURBOVCD.386 from the SYSTEM.INI file.	Try to remove these items manually and/or contact 3Com Technical Support.

Downloaded from www.Manualslib.com manuals search engine

Table 8-2 Microkey Error Codes and Their Meaning

Error Code	Possible Cause	Solution
1022	Cannot remove TURBOBUF from the SYSTEM.INI file.	Try to remove these items manually and/or contact 3Com Technical Support.

Restoring the 3C882 ISDN Modem to Autobaud

The 3C882 ISDN modem autobauds up to 115 Kbps (by default) to match your computer's COM port speed. If you fixed the baud rate of the modem using the AT$B command and the COM port speed of the connected computer no longer matches that rate, or if you have installed a serial port card that allows for transfers up to 230.4 Kbps and have set the baud rate accordingly, then you will not be able to communicate with the 3C882 ISDN modem. You can restore the 3C882 ISDN modem to autobaud mode by following these steps:

1 **Use terminal emulation software on the connected computer to set the software at a low baud rate, such as 1200 baud.**

2 **Power up the 3C882 ISDN modem and observe the LEDs.**

When the Test LED goes off, observe the B1 and B2 LED lights. These LEDs should flash momentarily. Immediately type the letter "a" repeatedly from your keyboard, until you see the letter "a" appear on the screen. (This may take approximately 5 seconds.) When you see the letter "a", it indicates that 3C882 ISDN modem is now running autobaud and will adapt itself to the baud rate of your computer's COM port.

3 **Send the command AT&W to the 3C882 ISDN modem to save this change.**

Downloaded from www.Manualslib.com manuals search engine

Using On-Line Help

The following on-line help is available:

- For comprehensive information about the 3C882 ISDN modem, click the 3ComImpact IQ Help icon in the 3ComImpact IQ program group.
- From the 3C882 Configuration dialog box for Windows, click the *Help* button for information about the Configuration dialog box.
- For the Macintosh, on-line help may be accessed by clicking the question mark icon in the main menu bar and then selecting the 3ComImpact IQ Help.

Finding More Information

For more information about the 3C882 ISDN modem, such as frequently asked questions and specific technical notes, refer to the enclosed Technical Support card for contact information, use 3Com's fax service (1) (408) 727-7021 in the U.S. or visit 3Com's World Wide Web site at http://www.3Com.com/.

Downloading Firmware to Your 3C882 ISDN Modem

Your 3C882 ISDN modem has been uniquely designed to be user-upgradable. The latest firmware for your 3C882 ISDN modem is available on 3Com's ftp site, ftp.3Com.com. Refer to your readme file for instructions concerning downloading firmware.

Downloaded from www.Manualslib.com manuals search engine

A Ordering ISDN Service

This appendix describes how to order ISDN service. If you are ordering ISDN for the first time, you may either have 3Com order ISDN service for you, free of charge, or you may choose to call your telephone company and order ISDN yourself.

ISDN line provisioning information is subject to change. Visit 3Com's World Wide Web site (http://www.3com.com) for the latest information.

Placing the ISDN Order Through 3Com

Simply call 1-800-572-3Com to have your ISDN line ordered for you. 3Com's SupernetAccess service will provide the appropriate line parameters to your telephone company and schedule installation of your ISDN line, wherever possible. Be sure to ask for the order code or order confirmation number.

Placing the ISDN Order Through Your Telephone Company

To simplify the many features available for ISDN, Bellcore has created several packages, called ISDN Ordering Codes (IOC), for choosing the line configurations that best fit your needs. For the 3C882 ISDN modem, 3Com recommends Capability Package S1.

If IOC S1 is not recognized by your telephone company, then Package M (with ACO added and, if you want supplementary voice services, ask for FCO as well) may be substituted. Should your telephone company fail to recognize either IOC S1or M, refer to "ISDN Line Parameter Tables".

Downloaded from www.Manualslib.com manuals search engine

To order the ISDN service from the telephone company for the 3C882 ISDN modem:

1 **Call the telephone company and ask for the ISDN representative.**

2 **Tell the representative that you would like to place an order for ISDN service for a 3ComImpact IQ External ISDN modem.**

3 **Request that your line be provisioned according to Bellcore capability package S1, the recommended ISDN Ordering Code for use with your 3C882 ISDN modem.**

IOC S1 provides circuit switched voice and data on both B channels, allowing simultaneous voice and data on either phone number, and may equip both ports with Additional Call Offering (ACO). Note that you may need to specifically request ACO, which allows for ISDN Call Waiting and incoming DBA.

Some telephone companies may choose to implement ISDN line provisioning uniquely. Therefore, some of the Supplementary Voice features may not be available for use with all telephone companies. Refer to "What Do I Need To Support Supplementary Voice Features?" on page A-3 or check with your telephone company for more information.

4 **Specify the optional Supplementary Voice Features that you would like to utilize on your ISDN line.**

To take full advantage of the 3C882 ISDN modem, you need to add Flexible Calling (FCO) features: 3-Way Calling (Call Conference); Call Transfer, Hold, and Drop; Caller ID (which is necessary to utilize the Call Logging feature); and the Call Forwarding variable, which enables Call Forwarding. You may also choose to order only those specific services that best fit your needs. Note that there may be an additional charge when adding each service to your ISDN line.

Downloaded from www.Manualslib.com manuals search engine

Some telephone companies may choose to refer to the Flexible Calling features by unique terminology. Refer to "What Do I Need To Support Supplementary Voice Features?" on page A-3 for more information; additionally, Chapter 6, "Supplementary Voice Features" provides a thorough explanation of each voice feature.

5 Ask the representative which ISDN switch type your ISDN line will be using. Place a check mark on the appropriate line on the ISDN Information Sheet on page 1-7.

Several features, such as Call Waiting and incoming DBA, are not available on a 5ESS Custom switch. If you would like to utilize these services, ask the representative if another switch type is available for your ISDN line.

6 Ask the ISDN representative to provide the information you need to fill out the rest of the ISDN Information Sheet on page 1-7.

This completes the procedure for ordering your ISDN line.

What Do I Need To Support Supplementary Voice Features?

Release 3.10, and any later releases of the 3CC882 ISDN modem, include supplementary voice features. To use these features, your ISDN line must provide the ability to support these services. Refer to Table A-1 to determine what capability your ISDN line needs to support the various services. Note that there may be an extra charge for these services.

Downloaded from www.Manualslib.com manuals search engine

Some telephone companies may choose to refer to the Flexible Calling features by unique terminology.

Table A-1 Supporting Supplementary Voice Features

To Use This 3ComImpact IQ Voice Feature	Ask for This on Your ISDN Line
ISDN Call Waiting Allows you to place a voice call on hold while you answer a second incoming call.	Additional Call Offering (included with Ordering Code S1)
Call Conference (3-Way Calling) Allows you to add a third party to an existing call.	Flexible Calling (FCO) or 3-Way Calling
Call Drop Allows you to remove the last caller added to a conference.	Flexible Calling (FCO) or Call Drop
Call Forwarding Allows you to transfer an existing call to another telephone number.	Call Forwarding Variable
Call Transfer Allows you to forward calls to a third party.	Flexible Calling (FCO) or Call Transfer
Call Logging Allows you to view a list of all incoming and outgoing telephone numbers.	Caller ID*

* Conventional, or analog Caller ID, which requires an external device to monitor incoming calls, is not supported by the 3C882 ISDN modem. However, you must have Caller ID enabled on your ISDN line to utilize the Call Logging feature.

ISDN Line Parameter Tables

Some telephone companies do not recognize ISDN Ordering Codes. In this case, simply determine the switch type for your ISDN line (by asking your ISDN representative), and photocopy and fax the appropriate table on the following pages directly to your telephone company.

Downloaded from www.Manualslib.com manuals search engine

AT&T 5ESS Switch NI1

To order ISDN service for the AT&T® 5ESS switch, supply the telephone company with the information provided in Table A-2.

Table A-2 Line Configuration for AT&T 5ESS NI1

Required Information	Specification
Line Type	Standard (2B+D) National ISDN-1 line
Line Code	2B1Q
Interface Type	U interface
Directory Numbers	2*
Maximum Terminals	1
Maximum B Channels	2*
Actual User	Yes
Circuit-Switched Voice	2*
Circuit-Switched Voice Channel	Any
Circuit-Switched Data	2
Circuit-Switched Data Channel	Any
Terminal Type	A (Basic Terminal)
Display	Yes
Circuit-Switched Voice Limit	2*
Circuit-Switched Data Limit	2
Voice or Data	Both
Call Appearance Preference	Idle
Flexible Call Offering (FCO)	Yes†
Additional Call Offering (ACO)	Yes‡
Caller ID	Yes**
Call Forwarding Variable	Yes††

* The Directory Number, Circuit-Switched Voice, Maximum B Channels, and Circuit-Switched Voice Limit parameters should be set to 2 to allow both analog ports to be used simultaneously. If those parameters are set to 1, the ISDN line can only place or receive one call at a time.

† Flexible Calling (FCO) provides 3-Way Calling (Call Conference), Hold, Drop, and Transfer from analog equipment attached to the modem.

‡ Additional Call Offering (ACO) allows you to use incoming Dynamic Bandwidth Allocation (DBA) as well as Call Waiting.

**Caller ID is necessary to employ the Call Logging feature. If you would like to have Call Logging, you must order Caller ID. However, Caller ID itself, which requires an external device to monitor incoming calls, is not supported.

††Call Forwarding allows you to forward calls to another telephone number.

Downloaded from www.Manualslib.com manuals search engine

AT&T 5ESS Custom Switch

To order ISDN service for the AT&T 5ESS Custom switch, photocopy and fax Table A-3 to the telephone company.

Table A-3 Line Configuration for AT&T 5ESS Custom

Required Information	Specification
Line Type	Standard (2B+D) ISDN line with point-to-point configuration
Line Code	2B1Q
Interface Type	U interface
Directory Numbers	2*
Maximum Terminals	1
Maximum B Channels	2*
Actual User	Yes
Circuit-Switched Voice	2*
Circuit-Switched Voice Channel	Any
Circuit-Switched Data	2
Circuit-Switched Data Channel	Any
Terminal Type	A (Basic Terminal)
Display	Yes
Circuit-Switched Voice Limit	2*
Circuit-Switched Data Limit	2
Voice or Data	Both
Call Appearance Preference	Idle
Flexible Call Offering (FCO)	No†
Additional Call Offering (ACO)	No‡
Caller ID	Yes**
Call Forwarding Variable	Yes††

* The Directory Number, Circuit-Switched Voice, Maximum B Channels, and Circuit-Switched Voice Limit parameters should be set to 2 to allow both analog ports to be used simultaneously. If those parameters are set to 1, the ISDN line can only place or receive one call at a time.

† Flexible Calling (FCO) provides 3-Way Calling (Call Conference), Hold, Drop, and Transfer from analog equipment attached to the modem. The 3C882 ISDN modem does not support FCO for use with an AT&T 5ESS Custom Switch.

‡ Additional Call Offering (ACO) allows you to use incoming Dynamic Bandwidth Allocation (DBA) as well as Call Waiting. The 3ComImpact IQ does not support ACO for use with an AT&T 5ESS Custom Switch.

**Caller ID is necessary to employ the Call Logging feature. If you would like to have Call Logging, you must order Caller ID. However, Caller ID itself, which requires an external device to monitor incoming calls, is not supported.

††Call Forwarding allows you to forward calls to another telephone number.

Downloaded from www.Manualslib.com manuals search engine

NorthernTelecomDMS 100 Switch

To order ISDN service for the Northern Telecom® DMS 100 switch, photocopy and fax Table A-4 to the telephone company.

Some telephone companies will only provision one analog voice port on a DMS 100 switch. Check with your telephone company for additional line provisioning information.

Table A-4 Line Configuration for DMS 100

Required Information	Specification
Line Type	Standard (2B+D) National ISDN-1 line
Line Code	2B1Q
Interface Type	U interface
Directory Numbers	2*
Circuit-Switched Voice	2*
Maximum B Channels	2*
Circuit-Switched Voice Limit	2*
Bearer Restriction Option	No packet mode data (NOPMD)
Protocol	Functional version 2 (PVC 2)
SPID Suffix	1
Terminal Endpoint Identifier (TEI)	Dynamic
Maximum Keys	64
Ring	No
Key System (EKTS)	No
Voice or Data	Both
Data Option	Lower layer compatibility
Flexible Call Offering (FCO)	Yes†
Additional Call Offering (ACO)	Yes‡
Caller ID	Yes**
Call Forwarding Variable	Yes††

* The Directory Number, Circuit-Switched Voice, Maximum B Channels, and Circuit-Switched Voice Limit parameters should be set to 2 to allow both analog ports to be used simultaneously. If those parameters are set to 1, the ISDN line can only place or receive one call at a time.

† Flexible Calling (FCO) provides 3-Way Calling (Call Conference), Hold, Drop, and Transfer from analog equipment attached to the modem.

‡ Additional Call Offering (ACO) allows you to use incoming Dynamic Bandwidth Allocation (DBA) as well as Call Waiting.

Downloaded from www.Manualslib.com manuals search engine

**Caller ID is necessary.to employ the Call Logging feature. If you would like to have Call Logging, you must order Caller ID. However, Caller ID itself, which requires an external device to monitor incoming calls, is not supported.

††Call Forwarding allows you to forward calls to another telephone number.

Siemens EWSD Switch

To order ISDN service for the Siemens® EWSD switch, supply photocopy and fax Table A-5 to the telephone company.

Table A-5 Line Configuration for Siemens EWSD

Required Information	Specification
Line Type	Standard (2B+D) National ISDN-1 line
Line Code	2B1Q
Interface Type	U interface
Directory Numbers	2*
Circuit-Switched Data and Voice	2*
Maximum B Channels	2*
Circuit-Switched Voice Limit	2*
Bearer Restriction Option	No packet mode data (NOPMD)
Protocol	Functional
SPID Suffix	1
Terminal Endpoint Identifier (TEI)	Dynamic
Key System (EKTS)	No
Flexible Call Offering (FCO)	Yes†
Additional Call Offering (ACO)	Yes‡
Caller ID	Yes**
Call Forwarding Variable	Yes††

* The Directory Number, Circuit-Switched Voice, Maximum B Channels, and Circuit-Switched Voice Limit parameters should be set to 2 to allow both analog ports to be used simultaneously. Otherwise, if those parameters are set to 1, the ISDN line can only place or receive one call at a time.

† Flexible Calling (FCO) provides 3-Way Calling (Call Conference), Hold, Drop, and Transfer from analog equipment attached to the modem.

‡ Additional Call Offering (ACO) allows you to use incoming Dynamic Bandwidth Allocation (DBA) as well as Call Waiting.

**Caller ID is necessary.to employ the Call Logging feature. If you would like to have Call Logging, you must order Caller ID. However, Caller ID itself, which requires an external device to monitor incoming calls, is not supported.

††Call Forwarding allows you to forward calls to another telephone number.

Downloaded from www.Manualslib.com manuals search engine

B AT Commands, S Registers, and Result Codes

The 3C882 ISDN modem AT commands are summarized in Table B-1, S registers in Table B-2, and result codes in Table B-3.

AT Command Set

Table B-1 summarizes the AT command set for the 3C882 ISDN modem.

Table B-1 AT Command Set Summary

Command	Function (Example)	Description
A	Answers an incoming circuit-switched ISDN modem call (AT A)	Answers an incoming data call.
$B*	Set baud rate (AT $B57600)	0 — Autobaud (default). Other settings are 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, and 230400. Autobaud does not exceed 115200. For 230400 you must send the command AT $B230400 to the ISDN modem.
%C	Compression	When enabled, compresses data to improve data transfer times using the hi/fn compression method. %C0 disables compression. %C2 enables compression.
&C	Serial port CD control (AT &C2)	&C0 forces CD to remain on at all times. &C1 forces CD to follow the state of the carrier from the remote system. CD turns on after CONNECT message is sent to host (default). &C2 forces CD to remain on except temporarily after disconnect.
D	(ATD5551234)	Dials an outgoing 56/64 Kbps circuit-switched digital connection.

Downloaded from www.Manualslib.com manuals search engine

Table B-1 AT Command Set Summary (continued)

Command	Function (Example)	Description
DD	(ATDD5551234)	Dials an outgoing TollMizer connection.
&D	DTR control (AT &D0)	&D0 causes ISDN modem to ignore DTR from host.
		&D1 causes ISDN modem to enter command state on detecting on-off transition of DTR.
		&D2 causes ISDN modem to hang up current calls upon on-off transition of DTR and prepares serial port to accept AT command at any speed (default).
E	AT command echo (AT E0)	E0 disables the echo of AT commands back to the host computer.
		E1 enables the echo of AT commands to the host computer (default).
&F	Restore factory defaults (AT &F)	Restores all factory default settings.
H	Hang up (AT H)	Hangs up the current connections.
I	Identification (AT I)	I displays the model number.
\N	Call Logging	\N displays the five latest incoming and outgoing calls over the data and analog ports. \N0 will clear this information.
O	Enter connect state (AT O)	Causes the ISDN modem to go out of command mode into on-line mode.
Q	Result code control (AT Q0)	Q0 enables the output of result codes (default).
		Q1 disables the output of result codes.
		Q2 disables the output of result codes in answer mode only.
\Q	Serial port flow control (AT \Q1)	\Q0 disables flow control.
		\Q1 enables bidirectional XON/XOFF software flow control.
		\Q3 enables bidirectional RTS/CTS hardware flow control (default).
%R	Read all S registers (AT %R)	Provides an output list of all S registers.
%S	Serial number	Displays serial number of ISDN modem.
Sn?	Read configuration register (AT S60?)	Reads a specific S register setting.

Downloaded from www.Manualslib.com manuals search engine

Table B-1 AT Command Set Summary (continued)

Command	Function (Example)	Description
Sn=	Write configuration register (AT S60=64)	Writes to a specific S register.
\S	Read on-line status: command settings (AT \S)	Reads the status of any parameters that have been modified through AT commands and provides call status information.
\T	Link inactivity timer (AT \T1)	\T0 disables inactivity timer (default). \Tn link inactivity timer in minutes. The ISDN modem automatically disconnects the call if no activity is sensed within n (n = 0–255) minutes.
V	Result code format (AT V0)	V0 enables short form result codes. V1 enables long form result codes (default).
%V	Show version number (AT %V)	Displays ISDN modem firmware version.
W	Displays connection speed	W0 displays COM port rate only (default) W1 displays COM port and ISDN data rate W2 displays ISDN data rate only
&W	Stores configuration (AT &W)	Stores the configuration of all S registers that are not part of the ISDN modem initial configuration set.
Z	Reset (AT Z)	Disconnects all calls in progress and performs a complete ISDN modem system reset.
+++	Enter command state	Causes ISDN modem to enter the command state if it is currently in the on-line state.

* To access the Configuration dialog box, the baud rate must be set to Autobaud.

Downloaded from www.Manualslib.com manuals search engine

S Registers

Table B-2 provides a complete list and descriptions of the S registers supported by the 3C882 ISDN modem. All S registers except S0 are the 3Com extended registers.

S registers notated with an asterisk are stored in nonvolatile memory and will not be cleared or returned to the default value if the ISDN modem is powered down.

Table B-2 S Registers

Registers	Descriptions
S0	Auto Answer: 0 — Disabled (default) X— Number of rings before auto answer (1-255).
S50*	ISDN Switch Signaling Type: 0 — Unknown (default) 1 — AT&T 5ESS Custom 3 — NI1/AT&T 5ESS 6 — NI1/NTI DMS 100 or Siemens EWSD
S51*	Phone #1
S52*	Phone #1 Service Profile ID (SPID)
S53*	Phone #2 (if required by your carrier)
S54*	Phone #2 Service Profile ID (SPID) (if required by your carrier)
S55	Terminal Endpoint Identifier 1: Stores the first TEI assigned by the switch. A value of 255 indicates no TEI has been assigned. This field is read-only.
S56	Terminal Endpoint Identifier 2: Stores the second TEI assigned by the switch if a second directory number is required by your carrier. A value of 255 indicates no TEI has been assigned. This field is read-only.
S57	Terminal Initialization State: Indicates the status of the first TEI using SPID 1. This field is read-only. 0 — ISDN modem has not attempted initialization 1 — ISDN modem has initialized successfully using SPID 1 2 — ISDN modem has failed initialization using SPID 1

Downloaded from www.Manualslib.com manuals search engine

Table B-2 S Registers (continued)

Registers	Descriptions
S58	Terminal Initialization State: Indicates the status of the second TEI using SPID 2. This information is provided only if your carrier requires a second directory number. This field is read-only. 0 — ISDN modem has not attempted initialization 1 — ISDN modem has initialized successfully using SPID 2 2 — ISDN modem has failed initialization using SPID 2
S59	U Interface Status: This field is read-only. 0 — ISDN U interface is not synchronized with the switch 1 — ISDN U interface is synchronized and ready
S60*	B Channel Data Rate: 56 — 56 Kbps (default) 64 — 64 Kbps
S61	Outgoing Call Type: 0 — Follow dial modifiers (default) 1 — Tollmizer (Switched 56 Permissive or Data Over Voice) 2 — ISDN

Downloaded from www.Manualslib.com manuals search engine

Table B-2 S Registers (continued)

Registers	Descriptions
S63*	Voice Call Routing
	0 — Calls to either analog port are blocked
	1 — Phone #1 to Phone port 1 only; Phone #2 calls blocked
	2 — Phone #1 to Phone port 2 only; Phone #2 calls blocked
	3 — Phone #1 to Phone port 1 or 2; Phone #2 calls blocked
	4 — Phone #1 calls blocked; Phone #2 to Phone port 1 only
	5 — Phone #1 to Phone port 1 only; Phone #2 to Phone port 1 only
	6 — Phone #1 to Phone port 2 only; Phone #2 to Phone port 1 only
	7 — Phone #1 to Phone port 1 or 2; Phone #2 to Phone port 1 only
	8 — Phone #1 calls blocked; Phone #2 to Phone port 2 only
	9 — Phone #1 to Phone port 1 only; Phone #2 to Phone port 2 only (default)
	10 — Phone #1 to Phone port 2 only; Phone #2 to Phone port 2 only
	11 — Phone #1 to Phone port 1 or 2; Phone #2 to Phone port 2 only
	12 — Phone #1 calls blocked; Phone #2 to Phone port 1 or 2
	13 — Phone #1 to Phone port 1 only; Phone #2 to Phone port 1 or 2
	14 — Phone #1 to Phone port 2 only; Phone #2 to Phone port 1 or 2
	15 — Phone #1 to Phone port 1 or 2; Phone #2 to Phone port 1 or 2
S65	ISDN Call Logging for Voice Calls for Phone Port 1:
	Displays the phone number of an incoming voice call over phone port 1. This field is read-only. To use this feature, you must have Caller ID enabled on your ISDN line.
S66	ISDN Call Logging for Voice Calls for Phone Port 2:
	Displays the phone number of an incoming voice call over phone port 2. This field is read-only. To use this feature, you must have Caller ID enabled on your ISDN line.
S67*	ISDN Call Logging for Data Calls:
	Displays the phone number of an incoming data call. This field is read-only. To use this feature, you must have Caller ID enabled on your ISDN line.

Downloaded from www.Manualslib.com manuals search engine

Table B-2 S Registers (continued)

Registers	Descriptions
S70*	Dynamic Bandwidth Allocation (DBA): 0 — DBA disabled 1 — DBA enabled for outgoing calls only 2 — DBA enabled for incoming calls only 3 — Enabled for both incoming and outgoing calls (default)
S71	B Channel Protocol: 0 — QuickSelect (default) 1 — Async-Sync PPP conversion 2 — V.120
S73	V.120 Frame Type: 0 — I frame (default) 1 — UI frame
S74	V.120 Maximum Frame Size (range 240–256): 256 — Maximum frame size of 256 (default) 248 — Maximum frame size of 248 (for AdTran® compatibility, use 253)
S75	Connection Delay: Specifies whether the ISDN modem immediately answers a call or waits 2 seconds to answer. If you are using Windows NT, use the two-second delay. 0 — No delay (default) 1 — Two-second delay
S76	ISDN Call Waiting: 0 — Phone 1 Call Waiting Disabled; Phone 2 Call Waiting Disabled 1 — Phone 1 Call Waiting Enabled; Phone 2 Call Waiting Disabled (default) 2 — Phone 1 Call Waiting Disabled; Phone 2 Call Waiting Enabled 3 — Phone 1 Call Waiting Enabled; Phone 2 Call Waiting Enabled
S77†	Call Conferencing: 0 — Disabled 60 — (default)
S78	Call Transfer: 0 — Disabled 61 — (default)

Downloaded from www.Manualslib.com manuals search engine

Table B-2 S Registers (continued)

Registers	Descriptions
S79	Call Drop: 0 — Disabled 62 — (default)
S80*	Multilink PPP: 0 — Disabled 1 — Enabled (default)
S82*	Multilink PPP Endpoint Discriminator Class: The 3C882 ISDN modem automatically sets the Endpoint Discriminator Class to 5. 1 — Locally Assigned Address 2 — Internet Protocol (IP) Address 3 — IEEE 802.1 Globally Assigned MAC Address 4 — PPP Magic-Number Block 5 — Public Switched Network Directory Number (default)
S83*	Multilink PPP Endpoint Discriminator Value (up to 20 characters) By default, the 3C882 ISDN modem automatically sets the Endpoint Discriminator value to the first telephone number. If your endpoint identifier class is not 5, obtain the identifier from your service provider and enter that information in this register.
S84	Challenge Handshake Authentication Protocol (CHAP) 0— Enabled 1— Disabled (default)

* The values of these S registers are stored in nonvolatile memory and will not be cleared or returned to the default value if the ISDN modem is powered down.

† Users of Pacific Bell ISDN service may need to set S registers 77, 78, and 79 to specific values. Check with Pacific Bell for the appropriate configurations.

Downloaded from www.Manualslib.com manuals search engine

Result Codes

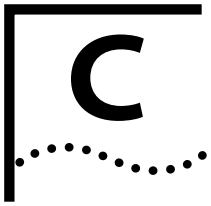
Table B-3 lists the 3C882 ISDN modem result codes.

Table B-3 3C882 ISDN Modem Result Codes

Short Form	Long Form	Meaning
0	OK	Indicates that the most recent command or action was successfully completed.
2	RING	Indicates that an incoming call is present and no AT Answer command is outstanding.
3	NO CARRIER	Indicates that the most recent call attempts did not establish a call or that the physical ISDN interface is not operational.
4	ERROR	Indicates that the most recent command or action was not successfully completed.
6	NO DIALTONE	Indicates the ISDN line is either down or not initialized.
7	BUSY	Indicates the latest call attempt did not connect because the remote destination was busy.
8	NO ANSWER	Indicates the location you are calling is not responding.
5	CONNECT 1200	Indicates 1200 bps serial port connection.
10	CONNECT 2400	Indicates 2400 bps serial port connection.
11	CONNECT 4800	Indicates 4800 bps serial port connection.
12	CONNECT 9600	Indicates 9600 bps serial port connection.
13	CONNECT 7200	Indicates 7200 bps serial port connection.
14	CONNECT 12000	Indicates 12000 bps serial port connection.
15	CONNECT 14400	Indicates 14400 bps serial port connection.
16	CONNECT 19200	Indicates 19200 bps serial port connection.
17	CONNECT 38400	Indicates 38400 bps serial port connection.
18	CONNECT 57600	Indicates 57600 bps serial port connection.
19	CONNECT 115200	Indicates 115200 bps serial port connection.
20	CONNECT 230400	Indicates 230400 bps serial port connection.
56	CARRIER 56000	Indicates 56000 bps ISDN modem connection.
57	CARRIER 56000P	Indicates 56000 bps permissive ISDN modem connection
64	CARRIER 64000	Indicates 64000 bps ISDN modem connection.

Downloaded from www.Manualslib.com manuals search engine

Downloaded from www.Manualslib.com manuals search engine



SPECIFICATIONS

This appendix describes the physical specifications of the 3C882 ISDN modem and provides the pin assignments of the RS-232 COM port, PC serial cable, and Macintosh serial cable.

3C882 ISDN Modem Specifications

Network Interface	Integrated Services Digital Network (ISDN) Basic Rate telephone service provided by the telephone company
Physical Interface	U (integrated NT1)
Physical Dimensions	Length 8.66 in. (22.0 cm.) Width 5.44 in. (13.8 cm.) Height 1.56 in. (4.0 cm.)
Environmental Operating Range	
Operating temperature	50˚ to 122˚F (10˚ to 50˚C)
Relative humidity	Up to 90% noncondensing
Power	
Input	110-120 VAC
Output	9 VDC
Ringer Equivalence Number (REN)	3 per analog phone port on up to 200 feet of AWG 26 or heavier AWG wiring
EMI Certification	FCC Part 15, Class B

Downloaded from www.Manualslib.com manuals search engine

RS-232 COM Port Pin Specifications

The asynchronous RS-232-D COM port on the 3C882 ISDN modem, labeled RS-232, is a standard DB-25 female connector. The 3C882 ISDN modem asynchronous port pin assignments, shown in Table C-1, conform to standard definitions for data communications equipment (DCE).

Table C-1 Pin Descriptions

Pin #	Pin Name	Signal Direction
1	Shield Ground (GND)	—
2	Send Data (SD)	To ISDN modem
3	Receive Data (RD)	From ISDN modem
4	Request to Send (RTS)	To ISDN modem
5	Clear to Send (CTS)	From ISDN modem
6	Data Set Ready (DSR)	From ISDN modem
7	Signal Ground (GND)	—
8	Carrier Detect (DCD)	From ISDN modem
18	Local Loopback	From ISDN modem
20	Data Terminal Ready (DTR)	To ISDN modem
21	Remote Loopback	To ISDN modem
22	Ring Indicator (RI)	From ISDN modem

Downloaded from www.Manualslib.com manuals search engine

PC Serial Cable Pin Specifications

The DB-25 male to DB-9 female pin assignments for the PC serial cable are provided in Table C-2.

Table C-2 PC COM Port Cable Pin Assignments

DB9 Pin #	Pin Name	DB25 Pin #
1	Data Carrier Detect (DCD)	8
2	Receive Data (RD)	3
3	Send Data (SD)	2
4	Data Terminal Ready (DTR)	20
5	Signal Ground (GND)	7
6	Data Set Ready (DSR)	6
7	Request to Send (RTS)	4
8	Clear to Send (CTS)	5
9	Ring Indicator (RI)	22
—	Shield	1

Macintosh Serial Cable Pin Specifications

The DB-25 male to 8-pin DIN male pin assignments for the Macintosh serial cable are provided in Table C-3.

Table C-3 Macintosh COM Port Cable Pin Assignments

8-Pin DIN Pin #	Pin Name	DB-25 Pin #
1	Data Terminal Ready (DTR)	20, 4
2	Clear to Send (CTS)	5
3	Send Data (SD)	2
4, 8	Signal Ground (GND)	7
5	Receive Data (RD)	3
7	Data Carrier Detect (DCD)	8

Downloaded from www.Manualslib.com manuals search engine

Downloaded from www.Manualslib.com manuals search engine

D CONFIGURATION USING DOS

Configuration Using DOS

To configure the 3C882 ISDN modem for an IBM PC or compatible computer using DOS, follow these steps.

You will need the ISDN Information Sheet you completed in Chapter 1.

1 **Create a directory on the hard drive, and then insert the *3ComImpact DOS Installation Diagnostic Utilities* diskette into the floppy drive of the PC.**

Create a new DOS directory. For example, to create a directory named 3Com on your C drive at the C:\> DOS prompt, type:

```
md c:\3Com
```

2 **Copy the INSTALL.EXE and README.TXT files from the *3ComImpact DOS Installation Diagnostic Utilities* diskette to the hard drive.**

To copy the INSTALL.EXE file, at the C:\3Com prompt, type:

```
copy a:\install.exe
```

To copy the README.TXT file, at the C:\3Com prompt, type:

```
copy a:\readme.txt
```

3 **Execute INSTALL from the hard drive.**

At the C:\> DOS prompt, type:

```
INSTALL
```

Downloaded from www.Manualslib.com manuals search engine

The configuration program launches and then the Port Settings screen appears. To move the cursor around the screen, use the [Up Arrow] and [Down Arrow] keys. To select a parameter, use the [Space Bar].

4 Use the [Space Bar] to select the 3C882 ISDN modem's COM port.

When you select the port, a default standard interrupt (IRQ) associated with that port is automatically chosen.

5 Press [F10] to connect to the 3C882 ISDN modem via the chosen COM port.

The Configuration screen appears.

6 Select the ISDN switch type.

Your telephone company can provide this information.

7 In the Phone #1 field, enter the telephone number to which your ISDN modem is connected.

8 Enter the corresponding Service Profile Identifier (SPID) in the SPID #1 field for the telephone number you entered in the previous step.

You should have received this SPID from your telephone company.

9 If you have a second telephone number associated with your ISDN telephone line (some telephone companies require two), enter the number and corresponding SPID in the Phone #2 and SPID #2 fields.

10 Use the [Space Bar] to select (enable) or unselect (disable) the MLPPP Enable box.

Multilink PPP combines the ISDN B channels, creating a virtual single digital connection of up to 128 Kbps. Note that the destination you are dialing must also support Multilink PPP, or the dual-channel link will not occur and you will get a single B channel connection.

Downloaded from www.Manualslib.com manuals search engine

11 Specify which Phone port should handle the calls associated with telephone number one.

If you plan to use the 3C882 ISDN modem's analog Phone ports, you will want to configure voice call routing by assigning telephone numbers to the analog ports. By default, telephone number 1 is assigned to phone port one and telephone number 2 is assigned to phone port 2.

For example, if the first telephone number is configured as 908 555 1212 and only the Phone Port 1 box is checked, then calls to 908 555 1212 will only ring the analog device attached to Phone Port 1.

12 If your ISDN line has two telephone numbers, specify which Phone port should handle the calls associated with telephone number two.

13 Confirm that the parameters listed in steps 6 through 12 are correct.

When these parameters are updated, the information is read back to the screen. Check to see that the values have been correctly entered.

14 Press [F10] to update the information in the ISDN modem.

15 Press [Esc] to return to the main menu.

Once in the main menu, exit the program.

Go to Chapter 5, "Advanced Configuration," to review the default settings and ensure that they reflect your preferences. If you prefer not to change the default settings, go on to Chapter 7, "Placing and Receiving Calls."

Downloaded from www.Manualslib.com manuals search engine

Downloaded from www.Manualslib.com manuals search engine

Glossary

Async-Sync PPP Conversion

Asynchronous to synchronous PPP conversion. The 3C882 ISDN modem converts asynchronous PPP into synchronous (HDLC-based) PPP that can be transported in ISDN B channels to communications servers that have integrated ISDN BRI, PRI, or T1 access lines.

AT commands

ATtention Codes. AT commands are used to configure and operate the 3C882 ISDN modem. These commands can be sent either automatically or manually through your communications software.

Autobaud

Automatic baud rate detection. Autobaud automatically detects the baud rate of your computer's serial port.

B channel

Bearer channel. In ISDN communications, a B channel transmits data and voice traffic at a rate of up to 64 Kbps.

BRI

Basic Rate Interface. A BRI line is one of two access methods to the ISDN. Each BRI consists of two 64 Kbps B channels and one 16 Kbps D channel for each ISDN line.

Call Drop

Call Drop is a supplementary voice feature that allows you to remove the last caller added to a conference.

Call Routing

Call Routing allows you to associate a specific telephone number to a specified analog port.

Downloaded from www.Manualslib.com manuals search engine

CHAP

Challenge Handshake Authentication Protocol. CHAP is one of two PPP authentication protocols; PAP is the other. An authentication protocol requests information to verify a valid user. CHAP is a stronger authentication method because it uses encryption and may repeatedly request verification of the identity of the user any time after link establishment.

COM port

The communications port (also referred to as a serial port). The 3C882 ISDN modem communications port allows a maximum baud rate of 230.4 Kbps. Note that most computer COM ports only allow a maximum of 115.2 Kbps. However, accelerator cards can be purchased to increase the computer's COM port rate to 230.4 Kbps.

Compression

Compression is a method of reducing the size of data packets without losing any information. The 3C882 ISDN modem automatically compresses data for PPP calls to improve data transfer times using the hi/fn™ compression method.

D channel

The signaling channel on an ISDN line used to carry messages between the 3C882 ISDN modem and the public switch.

DBA

Dynamic bandwidth allocation. DBA is a method of reallocating bandwidth (such as a B channel) automatically. DBA allows you to place or receive a voice call while a Multilink PPP call is active.

Default

Value set at the factory.

Downloaded from www.Manualslib.com manuals search engine

Firmware

Firmware is the code that resides in the 3C882 ISDN modem and controls its behavior. It differs from software in the form of programs that run on your computer.

ISDN

Integrated Services Digital Network. ISDN provides a digital telephone service which allows both data and voice communication over the same telephone line and at significantly faster speeds than the traditional POTs service. Two types of lines provide access to ISDN: BRI and PRI.

ISDN Call Logging

ISDN Call Logging displays the five latest incoming and outgoing numbers over the data and analog ports. To use this feature, your ISDN line must support Caller ID.

ISDN Call Waiting

ISDN Call Waiting is a supplementary voice feature that allows you to place a voice call on hold while you answer an incoming voice call. ISDN Call Waiting requires Additional Call Offering (ACO) provisioned on your ISDN line.

Kbps

Kilobits per second. The rate at which data is transmitted between communication equipment such as ISDN modems.

Layer 1

In ISDN communications, the physical layer of communications between the communication equipment. If layer 1 is down, there is no ISDN connection between the devices. The status bar in the 3C882 ISDN modem Configuration screen indicates layer 1 status.

Multilink PPP

A protocol that provides a method for combining multiple PPP connections. With a BRI line, Multilink PPP aggregates the two 56 Kbps or 64 Kbps ISDN B channels, creating a virtual single digital connection of up to 128 Kbps.

Downloaded from www.Manualslib.com manuals search engine

National ISDN

An ISDN standard that enables consistency in ISDN service features across different vendors' equipment and switches for North America.

Network terminator (NT1)

A device that terminates the ISDN line. The NT1 is built into the 3C882 ISDN modem.

PAP

Password Authentication Protocol. PAP is one of two PPP authentication protocols; CHAP is the other. An authentication protocol requests information to verify a valid user. PAP requests the user's name and password for verification.

POTS

Plain old telephone service.

PPP

Point-to-Point Protocol. PPP provides a standard method of transmitting data through the Internet. PPP is used for communication between a computer and an Internet service provider.

PRI

Primary Rate Interface. A PRI line is one of two access methods to the ISDN. In North America, each PRI consists of twenty-three 64 Kbps B channels and one 64 Kbps D channel.

QuickSelect

A built-in feature that automatically detects and uses the protocol required for each digital call: V.120 or Async-Sync PPP.

SPID

Service Profile Identifier. If required, this number is supplied to you by the telephone company. Typically, if your ISDN line has only one telephone number, a SPID is not required.

Downloaded from www.Manualslib.com manuals search engine

TollMizer

Allows you to place a data call over a voice channel, saving the extra cost of the data channel. Your telephone company, ISP, and the device into which you are calling must all support this feature.

V.120

A rate adaption scheme that converts transmission rates from a range of 300 bps to 115.2 Kbps to the B channel 56 Kbps or 64 Kbps rate. V.120 is used for communication between two computers.

Downloaded from www.Manualslib.com manuals search engine

Downloaded from www.Manualslib.com manuals search engine

Numerics

3C882 specifications C-1

A

advanced configuration parameters 5-1
analog equipment installation 2-5
analog port
    placing calls 7-6
    receiving calls 7-6
Apple Macintosh requirements 1-6
Async-Sync PPP 1-3
AT commands
    list B-1
    placing an ISDN data call 7-2
    setting 5-4
AT&T 5ESS Custom switch A-6
AT&T 5ESS NI1 switch A-5
Auto Answer 5-3
Autobaud 5-3

B

B channel data rate 3-10, 4-8, B-5
B channel LEDs 8-5
    B1 channel LED 2-3
    B2 channel LED 2-3
    monitoring 8-3
back panel components 2-2
Baud Rate 5-3
    configuring 230K 3-30

C

call
    data
        placing 7-1
        receiving 7-5
    voice
        placing 7-6
        receiving 7-6
Call Conference 6-3
Call Drop 6-4
Call Forwarding 6-1
Call Logging. See ISDN Call Logging
call routing
    analog ports for Macintosh 4-11

Downloaded from www.Manualslib.com manuals search engine

analog ports for PC using DOS D-3
analog ports for PC using Windows 3-13
Call Transfer 6-4
Call Waiting
Troubleshooting 8-7
Caller ID. See ISDN Call Logging
Challenge Handshake Authentication Protocol (CHAP) 1-4
changing parameter settings 5-4
COM port
connection 2-4
pinout specifications C-2
compression 5-3
configuration
advanced 5-1
Apple Macintosh
FreePPP 4-16
OT/PPP 4-12
changing 5-4
for an Apple Macintosh computer 4-2
using DOS D-1
using Windows 3-1
using Windows 95 3-15
using Windows NT 3.5.1 3-17
using Windows NT 4.0 3-20
Windows 95
230K 3-31
Dial-Up Networking 3-23
Internet Set-Up Wizard 3-24
Windows NT 3.5.1
230K 3-30
Windows NT 4.0
230K 3-31
Dial-Up Networking 3-26
connecting
analog devices 2-5
power cable 2-7
RJ-45/RJ-11 ISDN cable 2-5
serial cable for Macintosh 2-4
serial cable for PC 2-4
conventions 2
notice icons 2
text 2

D

D channel LED 2-3, 8-4
monitoring 8-3
data calls
placing 7-1

Downloaded from www.Manualslib.com manuals search engine

receiving 7-5
Data Over Voice. See TollMizer
Data Terminal Ready LED 2-3
Dial-Up Networking
Windows 95 3-23
Windows NT 4.0 3-26
DTR LED
monitoring 8-4
dynamic bandwidth allocation (DBA) 5-2
dynamic bandwith allocation (DBA)
Troubleshooting 8-7

E

environmental operating range C-1

F

front panel
components 2-2
LED indicator definitions 2-2

I

installation 2-1
analog equipment 2-5
Apple Macintosh
configuring Multilink PPP 4-7
configuring the B channel rate 4-8
configuring voice call routing 4-9
running the SPID Wizard 4-3
software 4-2
verifying the configuration 4-11
general steps 2-1
IBM-compatible PC
configuring Multilink PPP 3-9
configuring the B channel rate 3-10
configuring voice call routing 3-10
running the SPID Wizard 3-3
software 3-2
verifying the configuration 3-13
ISDN cable 2-5
power cable 2-7
serial cable 2-3
Windows 95
setup 3-15
Windows NT 3.5.1 RAS
setup 3-17

Downloaded from www.Manualslib.com manuals search engine

Windows NT 4.0
setup 3-20
Internet Setup Wizard 3-24
ISDN 1-1
Information Sheet 1-7
ordering service
for AT&T 5ESS Custom A-6
for AT&T 5ESS NI1 A-5
for Northern Telecom DMS 100 A-7
for Siemens EWSD A-8
placing data calls 7-1
receiving data calls 7-5
ISDN cable installation 2-5
ISDN Call Logging 7-7

L

LEDs
B1 channel 2-3
B2 channel 2-3
D channel 2-3
Data Terminal Ready 2-3
description 2-2
monitoring 8-2
Power 2-2
Receive Data 2-3
Self-Test/Status 2-2
Send Data 2-3

M

Macintosh
Configuring Internet Access 4-12
Macintosh requirements 1-6
Microkey error codes 8-8
Multilink PPP
configuration for DOS D-2
configuration for Macintosh 4-7
configuration for Windows 3-9
placing a call 7-3

N

network interface C-1
Northern Telecom DMS 100 switch A-7
NT1 1-3, 2-5

Downloaded from www.Manualslib.com manuals search engine

O

ordering ISDN service
for AT&T 5ESS Custom A-6
for AT&T 5ESS NI1 A-5
for Northern Telecom DMS 100 A-7
for Siemens EWSD A-8

P

package contents 1-4
parameter settings
changing 5-4
Password Authentication Protocol (PAP) 1-4
PC requirements 1-6
Phone port 2-5, 3-10, 4-9
physical dimensions C-1
placing calls 7-1
data 7-1
using AT commands 7-2
using TollMizer 7-4
voice 7-6
Plug and Play setup with Windows 95 3-15
power cable connection 2-7
Power LED 2-2
power requirements C-1
PPP protocol 1-2

Q

QuickSelect 1-2, 5-2

R

RD LED
monitoring 8-3
Receive Data LED 2-3
Receive Date (RD) LED 8-3
receiving calls
data 7-5
voice 7-6
requirements
Apple Macintosh computer 1-6
IBM or compatible PC 1-6
result codes B-9
ringer equivalence number C-1

Downloaded from www.Manualslib.com manuals search engine

S

S registers B-4
Self-Test/Status LED 2-2
Send Data (SD) LED
    monitoring 8-3
Send Data LED 2-3
serial cable installation 2-3
serial port 1-3
    connection for Macintosh 2-4
    connection for PC 2-4
Siemens EWSD switch A-8
specifications C-1
SPID Wizard 4-3
Switch 56 Permissive. See TollMizer
switch type A-5 to A-8

T

Test LED 8-2, 8-4
TollMizer 7-4
    placing a call 7-4
troubleshooting 8-1
    checking the basics 8-2
    evaluating symptoms and solutions 8-4
    Microkey error codes 8-8
    monitoring LEDs 8-2

V

V.120 protocol 1-2
voice calls
    placing 7-6
    receiving 7-6
Voice Features
    Call Conference 6-3
    Call Drop 6-4
    Call Forwarding 6-1
    Call Transfer 6-4
    Call Waiting 6-2
Voice Services
    Drop 6-4

W

warranty 1-4
Windows 95
    Plug and Play setup 3-15

Downloaded from www.Manualslib.com manuals search engine

Windows NT 3.5.1 3-17
Windows NT 4.0 3-20

Downloaded from www.Manualslib.com manuals search engine

Downloaded from www.Manualslib.com manuals search engine

LIMITED WARRANTY

HARDWARE: 3Com warrants its hardware products to be free from defects in workmanship and materials, under normal use and service, for the following lengths of time from the date of purchase from 3Com or its Authorized Reseller:

Internetworking products	**One year**
Network adapters	**Lifetime**
Ethernet stackable hubs and unmanaged Ethernet fixed port repeaters	**Lifetime* (One year if not registered)**
***Power supply and fans in these stackable hubs and unmanaged repeaters**	**One year**
Other hardware products	**One year**
Spare parts and spares kits	**90 days**

If a product does not operate as warranted above during the applicable warranty period, 3Com shall, at its option and expense, repair the defective product or part, deliver to Customer an equivalent product or part to replace the defective item, or refund to Customer the purchase price paid for the defective product. All products that are replaced will become the property of 3Com. Replacement products may be new or reconditioned. Any replaced or repaired product or part has a ninety (90) day warranty or the remainder of the initial warranty period, whichever is longer.

3Com shall not be responsible for any software, firmware, information, or memory data of Customer contained in, stored on, or integrated with any products returned to 3Com for repair, whether under warranty or not.

SOFTWARE: 3Com warrants that the software programs licensed from it will perform in substantial conformance to the program specifications therefor for a period of ninety (90) days from the date of purchase from 3Com or its Authorized Reseller. 3Com warrants the media containing software against failure during the warranty period. No updates are provided. 3Com's sole obligation with respect to this express warranty shall be (at 3Com's discretion) to refund the purchase price paid by Customer for any defective software products, or to replace any defective media with software which substantially conforms to 3Com's applicable published specifications. Customer assumes responsibility for the selection of the appropriate applications program and associated reference materials. 3Com makes no warranty or representation that its software products will work in combination with any hardware or applications software products provided by third parties, that the operation of the software products will be uninterrupted or error free, or that all defects in the software products will be corrected. For any third party products listed in the 3Com software product documentation or specifications as being compatible, 3Com will make reasonable efforts to provide compatibility, except where the non-compatibility is caused by a “bug” or defect in the third party's product.

STANDARD WARRANTY SERVICE: Standard warranty service for hardware products may be obtained by delivering the defective product, accompanied by a copy of the dated proof of purchase, to 3Com's Corporate Service Center or to an Authorized 3Com Service Center during the applicable warranty period. Standard warranty service for software products may be obtained by telephoning 3Com's Corporate Service Center or an Authorized 3Com Service Center, within the warranty period. Products returned to 3Com's Corporate Service Center must be pre-authorized by 3Com with a Return Material Authorization (RMA) number marked on the outside of the package, and sent prepaid, insured, and packaged appropriately for safe shipment. The repaired or replaced item will be shipped to Customer, at 3Com's expense, not later than thirty (30) days after receipt of the defective product by 3Com.

Downloaded from www.Manualslib.com manuals search engine

WARRANTIES EXCLUSIVE: IF A 3COM PRODUCT DOES NOT OPERATE AS WARRANTED ABOVE, CUSTOMER'S SOLE REMEDY FOR BREACH OF THAT WARRANTY SHALL BE REPAIR, REPLACEMENT, OR REFUND OF THE PURCHASE PRICE PAID, AT 3COM'S OPTION. TO THE FULL EXTENT ALLOWED BY LAW, THE FOREGOING WARRANTIES AND REMEDIES ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER WARRANTIES, TERMS, OR CONDITIONS, EXPRESS OR IMPLIED, EITHER IN FACT OR BY OPERATION OF LAW, STATUTORY OR OTHERWISE, INCLUDING WARRANTIES, TERMS, OR CONDITIONS OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND SATISFACTORY QUALITY. 3COM NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR IT ANY OTHER LIABILITY IN CONNECTION WITH THE SALE, INSTALLATION, MAINTENANCE OR USE OF ITS PRODUCTS.

3COM SHALL NOT BE LIABLE UNDER THIS WARRANTY IF ITS TESTING AND EXAMINATION DISCLOSE THAT THE ALLEGED DEFECT IN THE PRODUCT DOES NOT EXIST OR WAS CAUSED BY CUSTOMER'S OR ANY THIRD PERSON'S MISUSE, NEGLECT, IMPROPER INSTALLATION OR TESTING, UNAUTHORIZED ATTEMPTS TO REPAIR OR MODIFY, OR ANY OTHER CAUSE BEYOND THE RANGE OF THE INTENDED USE, OR BY ACCIDENT, FIRE, LIGHTNING, OR OTHER HAZARD.

LIMITATION OF LIABILITY: TO THE FULL EXTENT ALLOWED BY LAW 3COM ALSO EXCLUDES FOR ITSELF AND ITS SUPPLIERS ANY LIABILITY, WHETHER BASED IN CONTRACT OR TORT (INCLUDING NEGLIGENCE), FOR INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL, OR PUNITIVE DAMAGES OF ANY KIND, OR FOR LOSS OF REVENUE OR PROFITS, LOSS OF BUSINESS, LOSS OF INFORMATION OR DATA, OR OTHER FINANCIAL LOSS ARISING OUT OF OR IN CONNECTION WITH THE SALE, INSTALLATION, MAINTENANCE, USE, PERFORMANCE, FAILURE, OR INTERRUPTION OF ITS PRODUCTS, EVEN IF 3COM OR ITS AUTHORIZED RESELLER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, AND LIMITS ITS LIABILITY TO REPAIR, REPLACEMENT, OR REFUND OF THE PURCHASE PRICE PAID, AT 3COM'S OPTION. THIS DISCLAIMER OF LIABILITY FOR DAMAGES WILL NOT BE AFFECTED IF ANY REMEDY PROVIDED HEREIN SHALL FAIL OF ITS ESSENTIAL PURPOSE.

Some countries, states, or provinces do not allow the exclusion or limitation of implied warranties or the limitation of incidental or consequential damages for certain products supplied to consumers, so the above limitations and exclusions may be limited in their application to you. This warranty gives you specific legal rights which may vary depending on local law.

GOVERNING LAW: This Limited Warranty shall be governed by the laws of the state of California.

3Com Corporation
5400 Bayfront Plaza
Santa Clara, CA 95052-8145
(408) 764-5000

Downloaded from www.Manualslib.com manuals search engine

IMPORTANT: Read Before Using This Product

3COM END USER SOFTWARE LICENSE AGREEMENT

YOU SHOULD CAREFULLY READ THE FOLLOWING TERMS AND CONDITIONS BEFORE OPENING OR USING THIS PRODUCT. IT CONTAINS SOFTWARE, THE USE OF WHICH IS LICENSED BY 3COM CORPORATION ("3COM") TO ITS CUSTOMERS FOR THEIR USE ONLY AS SET FORTH BELOW. OPENING THIS PACKAGE OR USING ANY PART OF THE SOFTWARE INDICATES THAT YOU ACCEPT THESE TERMS. IF YOU DO NOT AGREE TO THE TERMS AND CONDITIONS OF THIS AGREEMENT, RETURN THIS ENTIRE PACKAGE UNOPENED OR WITH THE SOFTWARE UNUSED TO 3COM OR THE LOCATION WHERE YOU OBTAINED IT.

LICENSE: 3Com grants you a nonexclusive license to use the accompanying software program(s) (the "Software") subject to the terms and restrictions set forth in this License Agreement. Except as provided below, this License Agreement does not grant you any rights to patents, copyrights, trade secrets, trademarks, or any other rights in respect to the Software.

The Software is licensed to be used on ONE (1) WORKSTATION owned by or leased to you for use only in connection with a 3ComImpact IQ External ISDN Modem. One (1) copy of the Software may be made for backup or archive purposes in support of your use of the Software on a single workstation. You may not reproduce the supporting documentation accompanying the Software. You must reproduce and include the copyright notice(s) and any other proprietary rights notices appearing on any copy that you make.

ASSIGNMENT; NO REVERSE ENGINEERING: You may transfer the Software and license to another party in the same country in which you obtained the Software if the other party agrees in writing to accept the terms and conditions of this License Agreement. If you transfer the Software, you must at the same time either transfer any copies of the Software as well as the supporting documentation to the same party or destroy any such materials not transferred. Except as set forth above, you may not assign your rights under this License Agreement.

Modification, reverse engineering, reverse compiling, or disassembly of the Software is expressly prohibited. However, if you are a European Community ("EC") resident, information necessary to achieve interoperability of the Software with other programs within the meaning of the EC Directive on the Legal Protection of Computer Programs is available to you from 3Com upon written request.

EXPORT RESTRICTIONS: You agree that you will not export or re-export the Software or accompanying documentation (or any copies thereof) or any products utilizing the Software or such documentation in violation of any applicable laws or regulations of the United States or the country in which you obtained them.

TRADE SECRETS; TITLE: You acknowledge and agree that the structure, sequence and organization of the Software are the valuable trade secrets of 3Com and its suppliers. You agree to hold such trade secrets in confidence. You further acknowledge and agree that ownership of, and title to, the Software and all subsequent copies thereof regardless of the form or media are held by 3Com and its suppliers.

UNITED STATES GOVERNMENT LEGENDS:

For units of the Department of Defense:

The Software is commercial computer software as defined in 48 C.F.R. 211 and therefore is provided to units of the Department of Defense under the terms of this License Agreement, which is 3Com's standard commercial agreement for the Software. In the alternative, if 48 C.F.R. 211 is not invoked, the Software is licensed as follows: Restricted Rights Legend: Use, duplication or disclosure by the United States Government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software Clause at 48 C.F.R. 52.227-7013. 3Com Corporation, 5400 Bayfront Plaza, Santa Clara, California 95052-8145.

Downloaded from www.Manualslib.com manuals search engine

For civilian agencies:

Restricted Rights Legend: Use, reproduction or disclosure is subject to restrictions set forth in subparagraph (a) through (d) of the Commercial Computer Software - Restricted Rights clause at 48 C.F.R. 52.227-19 and the limitations set forth in 3Com's standard commercial agreement for the Software. Unpublished rights reserved under the copyright laws of the United States.

TERM AND TERMINATION: This license will expire fifty (50) years from the date that you open the package, if it is not earlier terminated. You may terminate it at any time by destroying the Software and documentation together with all copies and merged portions in any form. It will also terminate immediately if you fail to comply with any term or condition of this License Agreement. Upon such termination you agree to destroy the Software and documentation, together with all copies and merged portions in any form.

GOVERNING LAW: This License Agreement shall be governed by the laws of the State of California as such laws are applied to agreements entered into and to be performed entirely within California between California residents and by the laws of the United States. You agree that the United Nations Convention on Contracts for the International Sale of Goods (1980) is hereby excluded.

LIMITED WARRANTY; LIMITATION OF LIABILITY: All warranties and limitations of liability applicable to the Software are as stated on the Limited Warranty Card or in the product manual accompanying the Software. Such warranties and limitations of liability are incorporated herein in their entirety by this reference.

SEVERABILITY: In the event any provision of this License Agreement is found to be invalid, illegal or unenforceable, the validity, legality and enforceability of any of the remaining provisions shall not in any way be affected or impaired and a valid, legal and enforceable provision of similar intent and economic impact shall be substituted therefor.

ENTIRE AGREEMENT: This License Agreement sets forth the entire understanding and agreement between you and 3Com and may be amended only in a writing signed by both parties.

3Com is a registered trademark of 3Com Corporation.

3Com Corporation
5400 Bayfront Plaza
Santa Clara, CA 95052-8145
(408) 764-5000

Downloaded from www.Manualslib.com manuals search engine

FCC CLASS B CERTIFICATION STATEMENT

3Com Corporation
Model No: 3C882
FCC ID: DF63C882
Made in U.S.A.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1 this device may not cause harmful interference, and

2 this device must accept any interference received, including interference that may cause undesired operation.

WARNING: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules, and the Canadian Department of Communications Equipment Standards entitled, "Digital Apparatus," ICES-003. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from the one which the receiver is connected to.
- Consult the dealer or an experienced radio/TV technician for help.

The user may find the following booklet prepared by the Federal Communications Commission helpful:

The Interference Handbook

This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 004-000-00345-4.

NOTE: In order to maintain compliance with the limits of a Class B digital device, 3Com requires that you use quality interface cables when connecting to this device. Changes or modifications not expressly approved by 3Com could void the user's authority to operate this equipment. Refer to the manual for specifications on cabling types.

Downloaded from www.Manualslib.com manuals search engine

CANADIAN NOTICE

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operation, and safety requirements. The Department does not guarantee the equipment will operate to the users' satisfaction.

Before installing this equipment, users should ensure that is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the inside wiring associated with a single-line individual service may be extended by means of a certified connector assembly. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

CAUTION: *Users should not attempt to make electrical ground connections by themselves, but should contact the appropriate inspection authority or an electrician, as appropriate.*

Downloaded from www.Manualslib.com manuals search engine